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MANUAL

— OF —

PATENT LAW.

WITH AN

APPENDIX

UPON THE

SALE OF PATENTS.

BY

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PREFACE.

CUSTOM permits a writer, in his Preface, to project himself toward his readers in the use of the personal pronoun of the first person. Of that privilege I will avail myself for a little. Professional experience in the procuring of letters-patent for inventions, and in the conduct of litigation based upon them, has made me to know, that the great majority of inventors, and of other persons interested in patents, eagerly desire reliable information as to their rights and duties under the law, and as to all questions affecting patents.

The books designed for the use of that part of the legal profession devoted to patent practice are too costly to be practically within the reach of the profession in general, much less within the ordinary means of inventors and patentees. Not only this, but they are written in a vernacular fully understood by lawyers only; and, being devoted to a subject which a truly learned judge has styled "the metaphysics of the law," their language is doubly puzzling to a layman.

This book of mine is, obviously, not intended as an exhaustive treatise upon patent law, but as a statement and summary of the principles of the law; and it has been prepared with a careful remembrance of the fact, that a book may be as valuable for what it does not contain as for what it does. The subject admits of endless padding; but I have aimed to steer clear of that error.

In stating principles, the exact language of the courts has been used, when practicable. Patent law is growing and progressive, and I have attempted to show its advanced and later phases. All the way through, a prominent aim has been, to adapt the language to the clear comprehension of those who can not be expected to be familiar with the lawyers' vernacular. The hope is expressed, that the book may be of use to the profession in general, as well as to inventors and patentees.

THE SALE OF PATENTS. Co-equal with a patentee's desire to know about his legal rights, is his desire to know how to make his patent pecuniarily profitable. The topic is a commercial one, but of such a nature that an attorney in patent practice must needs become fully conversant with it. Having had frequent occasion to observe the blind way in which many inventors grope about in the vain endeavor to sell their patents, and having had equal occasion to observe the methods followed by business men in dealing with the same inventions and to become acquainted with skillful patent sellers and their methods of procedure, I can but think that the suggestions in the part devoted to the sale of patents will prove of material aid and assistance to those having patents to dispose of.

IN CONCLUDING this personal talk, let me say, that the book has, of necessity, been written at intervals, after the close of days of hard professional work, and it can but have its faults. Let the reader be kind enough to balance my motives against my shortcomings, and, if future editions are called for, I may hope to amend toward that perfection which I would reach.

W. E. S.

Hartford, Conn., 1874.

MANUAL OF PATENT LAW.

CHAPTER I.

THE NATURE OF A PATENT PRIVILEGE.

MANY, and perhaps the great majority of inventors have incorrect ideas of the nature of a patent privilege. Starting from false premises, they reason wrongly about various questions that arise, and are never able to comprehend why laws read as they do, or why the courts make certain constructions of the laws. A correct conception of the nature of a patent grant, and of the reasons upon which the patent law is based, will do much to clear up the difficulties of this nature that often beset inventors. The belief is very generally entertained, that inventors have a natural right to their inventions, of the same kind given by the statute, irrespective of the actual passage of the law.

Such is not the fact.[1]

The right to the exclusive use of an invention is not a natural right,—that is, pertaining to a man in a state of nature; but, when it exists at all, it is a civil right, pertaining to man under the protection of a civil government.

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1 *Traite des Brevets D'Invention: par C. Renouard. Phillips on Patents.*

All will concede that one natural right of a man is, to have an equal chance with his fellows to gather and amass the goods of this world. Suppose two men, under the protection and control of no human government, to be occupying and cultivating tracts of land side by side. This would be man in a state of nature. For years they plow, sow, and reap in the same manner and with the same rude tools. Finally one of them invents a plow, with which he can cultivate twice as much land in the same time as before, and do it better. There is no principle of natural justice which forbids the neighbor, upon seeing how well the plow works, from making and putting to use one like it. The doing so by the neighbor does not injure the inventor in any possible way. If the neighbor has not the right to make and put to use a plow like the inventor's, he is shut off from an equal chance with the inventor of amassing wealth, and this when his hindrance is no help to the inventor.

Not only this, but the neighbor, at the time the inventor made his plow, might have already begun to ponder upon the poor work done by the old plow, and set about making a better one, and would have soon invented the new plow himself, and thus acquired as good a title to the exclusive use of it as the prior inventor,—a use, however, from which he would be debarred by a person having no better title than himself, a thing that would be clearly unjust.

This last is by no means a merely suppositious case; for patent solicitors and Patent Office examiners well know that the same inventions are made over and over again by independent inventors. The writer has had a great many personal proofs of this assertion. The frequency with which this is done, would be most surprising, were it not another and a recognized fact, that the mind is governed

by laws of action just as much as the body; so that, given a certain invention to produce, and two minds of similar knowledge and habits to produce it, they will be quite likely to travel through the same road to the same result.

"An inventor has no right to his invention at common "law. He has no right of property in it originally. The "right which he derives is a creature of the statute and "of grant, and is subject to certain conditions incorporated "in the statutes and in the grants. If to-day you should "invent an art, a process, or a machine, you have no right "at common law, nor any absolute natural right, to hold that "for seven, ten, fourteen, or any given number of years, "against one who should invent it to-morrow, without any "knowledge of your invention, and thus cut me and every-"body else off from the right to do to-morrow what you "have done to-day. There is no absolute or natural right "at common law, that I, being the original and first inventor "to-day, have to prevent you and everybody else from in-"venting and using to-morrow or next day the same thing."[1]

Another reason that militates against the theory that an inventor has any natural exclusive right to his invention, is that, in a state of nature, he would have no power to enforce his rights. In theory, his every neighbor is as strong as he, and combined they are much stronger. It may be urged, that, as the inventor confers a benefit on his neighbor, by giving him knowledge of the invention, the neighbor is bound, in common justice, to make return therefor. This principle is no stronger than the one, that the inventor is bound, in common justice to his fellow-men, to permit them an equal chance with himself to amass wealth, when doing so entails no injury on himself.

1 *Am. H. & L. S. & D. Mach. Co. vs. Am. Tool & Mach. Co.*, 4 *Fisher's Pat. Cases*, 294.

If an inventor has a natural exclusive right to his invention for one moment, he has it forever; and, if any limit of time can be set to such a right, only infinite wisdom is adequate to so delicate a task. To state the doctrine of natural right thus, is to show that it does not exist. The law has never recognized the doctrine of natural right; for it can not recognize what does not exist.

The Policy of the Patent Law is, primarily, a selfish one on the part of the public, and only secondarily intended for the benefit of inventors, and then as a means to an end only. The Constitution of the United States gives Congress the power "to promote the progress of "science and the useful arts, by securing, for limited times, "to authors and inventors, the exclusive right to their "respective writings and discoveries;" thus showing, in this fundamental legislation, that the object sought is a benefit accruing to the public.[1]

The theory of the law is, that the promotion of science and the useful arts is of great benefit to society at large, and that such promotion can be attained by securing to inventors and authors, for limited times, the exclusive right to their inventions and writings. That such theory is correct, it is needless to say. It is almost self-evident, or at any rate readily susceptible of proof, that the magnificent material prosperity of the United States of America is directly traceable to wise patent laws and their kindly construction by the courts.

The patent laws promote the progress of the useful arts, in at least two ways: First, By stimulating inventors to constant and persistent effort, in the hope of producing some financially valuable invention; and, Second, By

1 *Day vs. Union Rubber Co., 3 Blatch. 500; Kendall vs. Winsor, 21 Howard, 327.*

protecting the investment of capital in the working and development of a new invention from interference and competition till the investment becomes remunerative.

A Patent is a Contract between the inventor and the Government representing the public at large.[1] The consideration moving from the inventor is the production of a new and useful thing, and the giving to the public of a full knowledge thereof by means of a proper application for a patent, whereby the public is enabled to practice the invention when the patent expires. The consideration moving from the Government is the grant of an exclusive right for a limited time, and this grant the Government protects and enforces through its courts.

It is not unusual for inventors to ask, "Why, when the "Government has given me an exclusive right, does it not "protect me in that right at its own expense?" There are numerous and all satisfactory answers to this question. The Government does not protect any right of property in a citizen at its own expense. The law gives a man a right to have debts due him paid; but it does not collect those debts at Government expense. A practical answer to the question is, that, if the Government were to attempt to carry on, at its own cost, all suits for infringement that patentees should request, it would require such a number of courts and such a host of lawyers, that the whole national revenue would not suffice to pay them, and the whole patent system would break of its own weight. Still another answer is, that the Government would, in a great many such suits, find that the alleged inventor had not given the consideration demanded for his patent, in that his invention was not new; and thus the public would be unjustly taxed to pay

1 *Ransom vs. N. Y., 1 Fisher's Pat. Cases, 252.*

the costs of suits which the patentees had no right to have brought. There are other answers of equal force, but these will suffice.

The Government provides the machinery of courts to enforce the rights of inventors. This machinery can be set in motion by the patentee; and, by the provision of this machinery, the Government has done its whole duty in the premises.

The method followed by these United States in the granting of patents, is probably the best in the world, and never ought to be materially changed. But one or two other countries make any examination at all into the novelty of an alleged invention presented as subject-matter for a patent, and by none of them is that thorough and systematic examination made that is had here. The small sum of money paid by an applicant for a patent is not really in the nature of a fee: it is money paid to support trained experts kept to examine into the novelty of alleged inventions, and to prevent inventors from going away with clearly invalid patents. Were it not for this governmental examination, no one would buy a patent, or risk any capital in working under it, except after a thorough and expensive search and vindication by a private professional expert. The Government really does a great amount of expert work for a small sum of money. That the examination made is not always perfect, is not surprising, when the vast number of applications acted on is taken into account,—there being about twenty-one thousand applications per year. The wonder is, not that so many mistakes are made by the examiners of the Patent Office, but that they make so few.

CHAPTER II.

PATENTABLE SUBJECT-MATTER.

THE statute provides: "That any person who has in-
"vented or discovered any new and useful art,
"machine, manufacture, or composition of matter, or any
"new and useful improvement thereof, not known or used
"by others in this country, and not patented or described
"in any printed publication in this or any foreign country,
"before his invention or discovery thereof, and not in
"public use or on sale for more than two years prior to
"his application, unless the same is proved to have been
"abandoned, may, upon payment of the duty required by
"law, and other due proceedings had, obtain a patent
"therefor."[1]

The words "invented" and "discovered" are, for the purposes of the patent law, practically synonymous.[2]

It may be observed, first, that an invention for which a patent is sought must be original with the applicant. Some countries, notably Great Britain, allow the first introducer of an invention to take a patent therefor, holding such an introducer to be the first inventor *within the realm.* Under the law of the United States, the applicant must be really an inventor,—the invention must be original with him. Although the statute specifies "any person," this is construed to permit joint inventors, no matter how many

1 *Section 24, Act of July 8, 1870.*
2 *Morton vs. New-York Eye Infirmary, 2 Fisher's Pat. Cases, 321.*

in number, to apply for and take a patent. Minors can apply as well as adults.

The patent law does not protect every new and useful invention or discovery: a discovery in mathematics, such as a new method of squaring a circle, or of getting the area of an irregular figure, is not a patentable invention; neither is an invention in finance, such as a new method of banking, nor an invention in the science of government, such as a new method or principle of laying taxes; and it was held by one really learned judge, that the art of producing insensibility in the human frame by means of the inhalation of etheric vapors, although the discovery of the anæsthetic powers of ether was original with the patentees, is not a patentable invention.[1] It is to be regretted, however, that the case referred to was not carried to the Supreme Court, that the principle therein laid down might have been forever confirmed or reversed.

"A discovery of a new principle, force, or law, operating, "or which can be made to operate, on matter, will not "entitle the discoverer to a patent. It is only when the "explorer has gone beyond the mere domain of discovery, "and has laid hold of the new principle, force, or law, "and connected it with some particular medium or me-"chanical contrivance, by which, or through which, it acts "on the material world, that he can secure the exclusive "control of it under the patent laws. He then controls "his discovery through the means by which he has brought "it into practical action or their equivalent, and only "through them. It is then an invention, although it em-"braces a discovery."[2]

1 *Morton vs. New-York Eye Infirmary, 2 Fisher's Pat. Cases, 321.*

2 *Morton vs. New-York Eye Infirmary, 2 Fisher's Pat. Cases, 323.*

The inventions specified as patentable are,—

1. An art or an improvement of an art;
2. A machine or an improvement of a machine;
3. A manufacture or an improvement of a manufacture;
4. A composition of matter or an improvement thereof.

An Art, in the sense of the patent law, is nearly or quite the same thing as a process; a patent for an art is for a way or manner of doing something in distinction from tangible means made use of in the process. That which is substantially a single invention often presents subject-matter for patentability as an art, a machine, and a manufacture. For instance, there is, at this writing, a patent in existence, for an improvement pertaining to the manufacture of car-wheels; the body of the wheel is cast of iron, and the tire of steel, both poured while molten into the same mold at the same time, being kept separate by an annular band of iron put into the matrix of the mold. In this case, the inventor had his choice to patent the process, the mold, or the wheel, all being new, or he might patent all three, thus covering an art, a machine, and a manufacture in what is really a single invention. He chose to patent the art, claiming the process of casting a wheel having a body of one kind or quality of metal and a tire of another kind or quality of metal, by pouring both metals into the same mold, at or about the same time, the two metals being kept apart while molten by a circumferential band placed in the mold.

It may be remarked here, that, when a new principle in nature has been discovered, and a way devised of practically applying the principle, it is advisable, in a majority if not all cases, to claim the invention as a process or art, if it is susceptible of being so claimed; for then the use of any agencies involving the application of the principle will

be an infringement of the patent; while, if only the particular means—as the machine made use of—are patented, another person may devise some other means to accomplish the same result, which are not legal equivalents, and thus avoid infringement, while really making use of the principle. A process may be put in practice by means of mechanical or chemical agencies, according to its nature; in either case, new agents may be employed to produce a new result, new agents may be employed to produce an old result, or old agents may be used in new relations to reach an old or a new result, and in either case the process will be patentable.

It is of little or no importance to specify an invention as an art, machine, manufacture, or composition of matter, so far as any requirement of the statute is concerned, provided the description is full and clear and the claim unambiguous; for courts take notice voluntarily whether the invention be one or the other. It is, however, important not to plainly claim an invention as one of these, when it is clearly another. For instance: a man invented a *process* for spinning flax, the essential feature of which was the maceration of the flax, whereby it could be spun at a shorter "reach;" he claimed his invention as "new and improved machinery "for macerating flax, etc.," when, in fact, his invention was not a *machine*, but a *process*. His patent was held invalid for this defect.[1]

A Machine is defined by Webster to be "any body or "assemblage of bodies used to transmit and modify force "and motion." This definition clearly gives the popular idea of what constitutes a machine; but, for the purposes

1 *Kay vs. Marshall, 2 Webster's Pat. Cases, 34.*

of the patent law, it may, perhaps, be more exactly defined as *one of the simple mechanical powers or a combination of two or more of them.* These simple mechanical powers are commonly spoken of as six in number,—the lever, the inclined plane, the pulley, the wedge, the screw, and the wheel and axle. They are really but two in number,—the lever and inclined plane; for the pulley is but a combination of levers of the same length having a common fulcrum, and the wheel and axle simply a combination of two sets of levers having a common fulcrum, while the wedge is but a double inclined plane and the screw a spiral inclined plane.

The popular and common idea of a machine, as defined by Webster, is probably the one moving in the mind of the legislator who drafted the patent law; that is, a mechanical apparatus for producing or working on some tangible product, and this in distinction from a hand-tool of fixed and immovable parts, as a hammer or a gimlet, which, though strictly speaking machines, are comprehended by the patent law under the term "manufacture."

A Manufacture, in the sense of the patent law, is a finished product, in distinction from a process or a machine, which are agencies for the creation of products, and in distinction, also, from products of a chemical nature, which are comprehended under the specification of "composition of matter."

The term "manufacture" includes most of the ordinary and vendible articles of trade,—such as textile fabrics, articles of personal attire (as hats, caps, and shoes), general hardware, house-furnishing goods, and the like,—and, perhaps, some tools which have moving parts, and which are really machines.

Composition of Matter comprises medicinal and chemical preparations, and new compounds intended as articles of food, though, in some cases, a new article of food, as a new and agreeable cracker or biscuit, is as well comprehended under the term "manufacture."

It has only been intended, in this chapter, to point out what different kinds of new and useful things are patentable, and not to define in what patentable novelty and utility consist. Those questions will be discussed in subsequent chapters.

CHAPTER III.

NOVELTY.

THE law requires, that an invention, to be patentable, must be "new and useful."[1] This chapter is devoted to the discussion of what constitutes patentable novelty, and a most difficult question it is. The statute says that the invention must be "not known or used by "others in this country, and not patented or described in "any printed publication in this or any foreign country "before his (the inventor's) invention or discovery there-"of;"[2] so that, though an invention may be original with an inventor, and new to him, yet, if it had been known or used by others in this country, or patented or described in any printed publication in this or any foreign country, *before his invention*, it is not new in the meaning of the patent law, and therefore not patentable.

The reason of this is, that, in case the invention was previously known here, or patented or described in a printed publication anywhere, then the public was previously in possession of knowledge of the invention, or at least might have been,—the law counting the accessibility of the information as its possession; so that the inventor does not put the public in possession of any thing it did not possess before, and hence is not entitled to any reward.

1 *Section 24, Act of July 8, 1870.*
2 *Ibid.*

On the other hand, although an invention may have been in public use for a long time in foreign countries previous to his invention, yet, if it had not been patented or described in a printed publication anywhere, an original inventor of the same thing is entitled to a patent here, provided that, at the time he makes application, he does not know of such previous foreign use, so that he may take the oath prescribed, in good faith. Should an inventor, *after* taking the oath, discover the fact of such previous foreign use, that would not affect the validity of his patent, though a knowledge of such use previous to taking oath would render him unable to take the oath in good faith.

The use in this country, or patent or printed publication anywhere, which will destroy a real inventor's right to a patent must have been *previous to his invention*. Such use, patent, or publication will not affect the inventor's right to a patent, if such use, patent, or publication was merely prior to his application and not prior to his invention, unless the use here was a public use, with the inventor's consent, and more than two years prior to his application. What constitutes a public use here, will be discussed hereinafter.

The amount of labor or thought expended upon an invention is, for the purposes of this discussion, immaterial. It may be "a simple but happy conception, which, when "reduced to practice, produced surprising results, both in "the quality of the article manufactured and the rapidity "with which it was turned out. A subject-matter to be "patentable must require invention, but it is not necessa-"rily the result of long and painful study, or embodied "alone in complex mechanism. A single flash of thought "may reveal to the mind of the inventor the new idea, and "a frail and simple contrivance may embody it. Some

"inventions are the result of long and weary years of study "and labor, pursued in the face of abortive experiments "and baffled attempts, and finally reached after the severest "struggles, while others are the fruit of a single happy "thought."[1]

It may sometimes become pertinent to inquire whether a device under consideration is not so frivolous as to exclude the possibility of *any* thought having been exercised upon it, but in all other cases the amount of thought or labor exercised is unimportant. Iron was formerly made by the use of charcoal and a cold blast; a man discovered an advantage in the use of bituminous coal and a cold blast, another man discovered a further advantage in the use of bituminous coal and a hot blast, a third person discovered an advantage in the use of anthracite coal and a hot blast; each of the three persons took a patent for his invention, and the patents were all held valid. In the decision last quoted from, the invention patented was only a ruffle for ladies' wear, and the patent was sustained.

Identity. The question of novelty comes up oftenest in its most difficult aspect, in determining whether an alleged invention is or not substantially identical with some prior existing thing, which was in common use here, or shown in some patent or printed publication. An invention, in such case, in order to be patentable, must be substantially unlike the prior thing.

Every change is not invention; indeed, a device may embody a very high degree of ingenuity, and yet not be patentable, because not substantially unlike some prior thing. Suppose a person to have invented and patented

1 *Magic Ruffle Co. vs. Douglas, 2 Fisher's Pat. Cases, 330.*

a machine having four distinct parts or elements; another person, desiring to effect the same result, might make another machine having none of the exact parts of the first, but having four other parts which are mechanical equivalents for the four parts used by the patentee. In the selection and arrangement of his parts, the latter person may have shown great ingenuity, especially if he has, as is often the case, been all the while aiming to avoid the appearance of the prior machine; yet, if the parts of the later machine operate upon the same principle as the parts of the prior machine,—are equivalents for them,—then, no matter how unlike the two machines may be in appearance, the latter is substantially identical with the former, and is not patentable, unless it should happen to produce a better or cheaper product than the prior machine, and then only as an improvement on the former; and, in such case, the later patent would be tributary to the earlier, and could not be put in practice without the permission of the owner of the former patent.

The question of substantial identity often comes up in a different aspect when an invention is presented at the Patent Office to be patented, than when, in a suit in the courts, a patentee is striving to show that a certain thing is an infringement of his patent. A device may be patentable, and yet be an infringement of another prior patent. Perhaps this fact is not generally understood.

When a man makes a new and useful invention, he is entitled to a patent for it. Another man may improve upon the same invention so as to produce a better result of the same kind or a cheaper result, or he may simplify the invention, so that he will be entitled to a patent for the improvement. In such case the later patent is subordinate and tributary to the earlier, and can not be worked except by

license from the earlier patentee. Whether a man has made a patentable improvement on a former patent, is often a question at the Patent Office; but the question does not come up in this shape in infringement suits in the courts, — there the question is, whether two things are substantially identical, without reference to whether one works better or worse than the other.

Mere change of form in a machine or its parts does not destroy the substantial identity of the parts changed, if such part still performs the same duty or function as before; and it must not be supposed that, because one machine looks entirely unlike another, that therefore they are substantially different. After one man had invented a steam-engine and patented it, another man undertook to evade the patent; he produced an engine which *looked* entirely unlike the first, — yet, when some one thought to turn the later machine "upside down," the resemblance came out at once. When one recalls the scores, if not hundreds, of different styles of steam-engines, all operating on the same general principle, — that is, by the expansive force of steam, — he can readily comprehend, that though things may be very unlike in appearance, yet they may be the same in operating principle.

Equivalents. There are certain things in mechanics and in chemistry, known to the patent law as equivalents, — that is, different combinations of mechanical or chemical elements which will accomplish the same results. On looking into a book containing a compilation of mechanical movements, — and there are such books, — one part will be found devoted to a class of devices for converting rotary into regular rectilinear reciprocating motion; another part will be devoted to devices for converting regular recipro-

cating motion into intermittent reciprocating motion, — and so on; each of these parts or chapters contains a number of different devices for effecting the same purpose. All the devices in the same part or chapter are equivalents for each other, known and recognized as such. Now if, in a patented machine, one of these devices is made use of to accomplish a certain movement or purpose, it is not a substantially different thing to use another of the devices which is a known and recognized substitute for the device shown in the patent.

A learned judge says that "By equivalents in machinery "is usually meant the substitution of merely one mechanical "power for another, or one obvious and customary mode "for another, of effecting a like result."[1]

Another judge says: "A mechanical equivalent, I sup- "pose, as generally understood, is where one may be "adopted instead of the other, by a person skilled in the "art, from his knowledge of the art."[2]

Another judge says: "When, in mechanics, one device "does a particular thing, or accomplishes a particular "result, every other device *known* and *used* in mechanics, "which skillful and experienced workmen know will pro- "duce the same result or do the same particular thing, is a "known mechanical substitute for the first device men- "tioned for doing the same thing or accomplishing the "same result. It is sufficient to constitute a known me- "chanical substitute, that when a skillful mechanic sees "one device doing a particular thing, that he knows the "other device, whose uses he is acquainted with, will do "the same thing."[3]

1 *Smith vs. Downing, 1 Fisher's Pat. Cases, 87.*
2 *Johnson vs. Root, 1 Fisher's Pat. Cases, 363.*
3 *Carter vs. Baker, 4 Fisher's Pat. Cases, 409.*

The same rules by which may be determined what constitutes an equivalent in machinery, are applicable in determining what constitutes an equivalent in an "art," or, in other words, in a process, in a "manufacture," or a "composition of matter." Where a process consists of a single step or a succession of steps, it is an equivalent for one of these steps to substitute another step, or way, or manner of action, that a person, skilled in the branch of business to which the process appertains, knows, simply from past experience or accumulated knowledge, will effect the same result.

And in "compositions of matter"—or, generally speaking, in medicinal, chemical, and food compounds—it is an equivalent to use, in the place of one of the substances of which the preparation is composed, another substance which a person of competent knowledge (in this case generally a chemist) knows, from his knowledge of ingredients, will serve the same purpose. Upon this subject a learned judge says: "Where a patent is granted for a composition "made of several ingredients, it covers and embraces "known equivalents of each of the ingredients. An "equivalent of any substance is another substance having "similar properties and producing substantially the same "effect."[1]

In comparing two "manufactures,"—that is, generally speaking, two finished products,—it is to be determined whether or not they are identical, by ascertaining if they have similar parts or properties, if they will answer the same end, and if they answer the same end by means of similar properties. If they do, then they are substantially identical; otherwise not.

1 *Matthews vs. Skates, 1 Fisher's Pat. Cases, 609.*

Double Use. The mere application of an existing process, machine, manufacture, or compound to a purpose to which it had never before been applied, is not patentable. If the prior device is a patented one, the patentee has the exclusive right to it for all the uses to which it is applicable, no matter whether he knew of all those uses or not, and no matter what the use for which he deemed it specially applicable. All new uses that are afterward found or discovered for the device are his property.[1]

Upon this topic a learned judge says: "It requires no "commentary to establish that the application of an old "thing to a new use, without any other invention, is not "a patentable contrivance. A man, who should use a "common coffee-mill for the first time to grind peas, "could hardly maintain a patent for it. A man, who "should, for the first time, card wool on a common "cotton-carding machine, would find it difficult to estab- "lish an exclusive right to the use of it for such a pur- "pose."[2] In a subsequent case before the same judge, Elias Howe brought suit for an infringement of a patent owned by him for a process of preparing palm-leaf or brub-grass for stuffing for beds. It appeared, at the trial, that the same process had been previously applied to the preparation of hair for the same purpose. The judge said of the patented process: "It is therefore the mere applica- "tion of an old process or old machinery to a new use. It "is precisely the same, as if a coffee-mill were now for the "first time used to grind corn. The application of an old "process to manufacture an article to which it had never "before been applied, is not a patentable invention. There

1 *Woodman vs. Stimpson, 3 Fisher's Pat. Cases, 104. McComb vs. Brodie, 2 Patent Office Gazette, 119.*

2 *Ames vs. Howard, 1 Robb's Pat. Cases, 694.*

"must be some new process or some new machinery used "to produce the result. If the old spinning-machine to "spin flax were now first applied to spin cotton, no man "could have a new patent to spin cotton in that mode, "much less the right to spin cotton in all modes, although "he had invented none. He who produces an old result "by a new mode or process, is entitled to a patent for that "mode or process; but he can not have a patent for a "result merely, without using some new mode or process "to produce it."[1] The patent was held invalid. It may be remarked, apropos of this case, that the claim was not rightfully drawn; if claim had been made to the prepared brub-grass as a new article of "manufacture," it might have been possible to show that the manufacture had such different properties, in kind, from the former manufacture, and so much advantage in cheapness, as to support a patent.

In a still later case, before the Supreme Court, the improvement claimed in the patent was the making of door and other knobs of clay or porcelain fitted upon a shank in a common manner. It was shown that knobs of clay or porcelain were old, and that the mode of fastening the shank into the cavity of the knob was old. The only new thing was the substitution of a clay or porcelain knob in the place of a metallic one. The court said: "The difference "is formal, and destitute of ingenuity or invention. It may "afford evidence of judgment and skill in the selection and "adaptation of the materials in the manufacture of the "instrument for the purposes intended, but nothing more;" and the patent was declared void.[2]

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1 *Howe vs. Abbott, 2 Robb's Pat. Cases, 103.*
2 *Hotchkiss vs. Greenwood, 11 Howard, 248.*

Combinations. An invention is, generally speaking, always a specific thing or a combination of specific things; and this is true, whether the invention be an art, machine, manufacture, or composition, — for a process must consist of a single step or a succession of steps, a machine must be a single elementary power or a combination of elementary powers, a manufacture (when strictly distinguished from other patentable subjects) is a specific thing, and a composition of matter must always be a combination of different ingredients.

A combination may be a valid and proper one, though all the parts which compose it are old when considered separately.[1] All the *new* elements of a combination can be, generally, claimed specifically, as well as in the combination. When the invention under consideration is a combination, its novelty is not impugned by showing that any one or more of its elements less than the whole had been used together before. The novelty of a combination can only be destroyed by showing that all the elements thereof had been used together before, and in the same relation to each other as in the combination under consideration.

"Equivalents" in Combinations. There seems to be some uncertainty, in some cases decided by the courts, as to how broadly the doctrine of equivalents applies to mechanical combinations. Take the case of Crompton *vs.* Belknap Mills (vol. iii. Fisher's Patent Cases, page 536). The judge, in the course of his decision, quotes as follows: —

"'Any machine combining substantially in the same "manner, substantially the same elements, or well-known

1 *Evans vs. Eaton, Peters's Circuit Court Rep. 343. Barrett vs. Hull, 1 Mas. 474.*

"substitutes for the same, must be regarded as an infringe-
"ment.' *Gorham vs. Mixter*, 1 Am. Law Jour. 549.

"'But it would not be infringed by a combination which
"dispensed with one of the elements and substituted there-
"for another element, substantially different in construction
"and operation, but serving the same purpose.' *Eames*
"*vs. Godfrey*, 1 Wallace, 79.

"'Nor by any and every combination of the same ele-
"ments, which may produce the same result, but only by
"the peculiar combination of the elements described or
"one substantially the same.' *Case vs. Brown*, 2 Wal-
"lace, 320.

"'The elements here combined are old, the patent is for
"the peculiar combination, and the doctrine of mechanical
"equivalents does not apply.' *McCormick vs. Talcott*, 20
"Howard, 405."

Now the first two of these quoted decisions would be generally recognized as applications of the doctrine of mechanical equivalents, if their language had been used with reference to a claim for a specific thing. The language of the third case seems to be extreme in the opposite direction. The decision last quoted, which will be given more at length soon, enunciates as a rule for construction of claims, that the "state of the art" shall be taken into consideration; and this rule is as well applicable to a claim for a specific thing as to a claim for a combination.

In the case of Crompton *vs.* Belknap Mills, the judges, while seeming to enunciate broadly the rule that the doctrine of mechanical equivalents does not apply to elements of combinations which are old when separately considered, really decided that there was no infringement of the plaintiff's combination claim, because there was a "marked and substantial difference" between one element of the plain-

tiff's combination and an element in the defendant's combination for performing a similar office, which can hardly be held to be a practical decision upon the point in question.

There can be no question made, that when an element of a combination is new, separately considered, the doctrine of mechanical equivalents applies with full force.[1]

The decision of the Supreme Court, in the case of McCormick *vs.* Talcott (20 Howard, 402), was as follows: The claim was,—"4th. I claim the combination of the "bar L and the dividing-iron M, for separating the wheat "in the manner described." Upon this the court said (page 404): "In order to ascertain whether the divider "used by defendants infringes that of the complainant, we "must first inquire whether McCormick was the first to "invent the machine called a divider, or has merely im- "proved a known machine by some peculiar combination "of mechanical devices which perform the same functions "in a better manner. If he be the original inventor of "the device or machine called the divider, he will have "the right to treat as infringers all who make dividers "operating on the same principle, and performing the "same functions by analogous means or equivalent com- "binations, even though the infringing machine may be "an improvement of the original, and patentable as such. "But, if the invention claimed be itself but an improve- "ment on a known machine, by a mere change of form or "combination of parts, the patentee can not treat another "as an infringer who has improved the original machine "by use of a different form or combination, performing "the same functions. The inventor of the first improve-

1 *Cahoon vs. Ring, 1 Fisher's Pat. Cases, 397.*

"ment can not invoke the doctrine of equivalents, to sup-
"press all other improvements which are not mere colorable
"evasions of the first."

The authority of this case can not be disputed. The justice of the principle enunciated is perfectly evident; but that principle has as strong an application to a claim for a specific thing as to a claim for a combination. The distinction between an "equivalent" and a "mere colorable evasion" has never been clearly drawn, and perhaps can not be. "Equivalents" seems to be a broad term, including "colorable evasions" which are plain, palpable, and obvious substitutes, about which no doubt can be raised as to their being substantially the same as the things for which they are substituted.

The rule, then, as to elements of combinations which are old, separately considered, is this: the doctrine of mechanical equivalents does not apply to them in its full force; but a mere colorable evasion—a palpable, plain, obvious substitute—will be held the same thing as the element for which it is substituted. This rule ought to be given its full force; for "the most valuable inventions "consist in the combination of known mechanical powers. "Every part of such inventions may be found in some "form among the various devices of human ingenuity, and "the man who unites these powers, and produces a new "and important result to society, is well denominated a "public benefactor."[1]

The doctrine of equivalents applies to processes, whether composed of a single step or a combination or succession of steps, and also to combinations of substances forming compositions of matter. Where a process consists of a

1 *Pitts vs. Edmond, 2 Fisher's Pat. Cases, 55.*

series of different steps, it is really a combination of such steps; and if, in the place of one of them, another step is made use of, which a person skilled in the art to which the process appertains, knows, from past experience or accumulated knowledge, will answer the same purpose, the substitution of such other step is a mere equivalent. So in combinations of substances to form compositions of matter, if one ingredient is left out, and another substituted, having the same or similar properties, and capable of serving the same or a similar purpose, then the use of such substitute is a mere equivalent, and does not render the two compositions of matter substantially unlike. "Where a patent is "granted for a composition of matter made of several "ingredients, it covers and embraces known equivalents "of each of the ingredients."[1]

Where a composition of matter is of certain ingredients *in certain proportions*, a composition of the same ingredients in other proportions is a different thing, and, if a better or a cheaper result is produced by the change in proportions, or a different result in kind, the changed compound is patentable. But a slight variation from stated proportions is not a substantial variance, does not avoid infringement, and is not patentable, unless, indeed, the *exact* proportions had been hitherto considered essential.

Combination versus Aggregation. It is not every putting of things together that constitutes a patentable invention. Thus, if one takes a common hammer and puts an awl into one end of the handle and a screw-driver blade into the other, this is not a combination that constitutes a patentable novelty. The law denominates such an

1 *Matthews vs. Skates, 1 Fisher's Pat. Cases, 609.*

assemblage of parts a mere aggregation and not a patentable combination.

The elements of a patentable combination must co-act; the action of one element must influence the action of the other elements, and all work together toward a common end. "A combination in mechanism must consist of dis- "tinct mechanical parts, having some relation to each "other, and each having some function in the organism."[1] All the parts of a combination must "co-act in producing "the result claimed for a combination."[2]

Form, Size, and Proportions. As a general rule, an alteration of the form, size, or proportions of an existing device is not such a change as to produce patentable novelty.[3] Enlarging or diminishing any or all of the parts of a machine or manufacture does not alter or change the principle, and hence is not patentably novel. But there are cases in which form is of the essence of the invention, and then change of form may alter substantial identity. In the matter of plows, for instance, a change in the form of the share, landside, or mold-board may constitute invention, for a new effect may be produced on the soil thereby.

In a case which came before the United States Supreme Court, where the alleged invention was an improvement in plows, Marshall, the most distinguished of our chief-justices, said: "It is not every change of form and proportion "which is declared to be no discovery, but that which "is *simply* a change of form or proportions, and nothing "more. If, by changing the form or proportions, a new

1 *Yale & Greenleaf M'f'g. Company vs. North, 3 Fisher's Pat. Cases, 287.*
2 *Swift vs. Whisen, 3 Fisher's Pat. Cases, 357.*
3 *Reutgen vs. Kanowrs, 1 Wash. 171. Parker vs. Little, 3 Wash. 198.*

"effect is produced, there is not simply a change of form "and proportion, but a change of principle also."[1]

In a later case, another learned judge discoursed lucidly upon this question, as follows: "A change of form will "not do, inasmuch as a different form might answer all "the purposes of the first invention. There are instru- "ments invented in which the particular form is a material "part of the discovery, and then a departure from the "form would be a substantial departure, because the form "is essential to the invention. But there are many manu- "factures where the particular form of the thing is not "essential to its utility, and there may be a departure from "that form and still a valuable instrument be constructed. "Take the plaintiff's wheel for an illustration. The curved "form is given to the plates to allow for the expansion and "contraction of the plates in casting the chilled rim. But, "for the purpose of making allowance for contraction, any "other form involving the principle of that allowance may "be used, and there would obviously be no substantial "change in the thing manufactured, because the particular "form given by the first inventor is not essential to the "production of the instrument. If the form is a part of "the thing invented, and is essential to its value, then "a change from the form is a substantial change, and may "be the means of producing a new manufacture. Take "the Blanchard machine as an illustration: it is one of "the most ingenious machines of the day, and is con- "structed to turn irregular forms after a pattern, such as "gunstocks, lasts, and spokes for carriage-wheels. Blan- "chard, in his machine, cuts the block, whether for a "last, or a gunstock, or a spoke, after a pattern, by means

1 *Davis vs. Palmer, 2 Brock. 298.*

"of rotating cutters. A modification of this machine was "made and set up as a new machine, and claimed not to "be an infringement. Instead of rotating cutters, the "cutters were made stationary, and the block rotated. It "was claimed that this was an entirely different principle "from Blanchard's, and that the party making the change "had not violated his patent. Now any person of common "understanding would see that the thing could be done in "that way; it was a mere difference in the mechanical "contrivance, and a change of form, in which there was "no skill and no ingenuity. This illustrates the difference "between a change of form and a substantial change "involving mind, ingenuity, and invention."[1]

Tests of Novelty. It is a general principle, that an invention, to be novel, in the sense of the patent law, must involve one of two things: First, A *difference in the principle* of operation, as compared with any prior device; or, Second, A *different result in kind.*

"The novelty of an invention is either the manufacture "produced, or the manner of producing an old one. If "the patent is for the former, it must be for something "substantially new, different from what was before known; "if the latter, the mode of operation must be different, "not a mere change of the form or proportions; if both "are the same in principle, structure, mode of operation, "and produce the same result, they are not new, though "there may be a variance in some small matter for the "purpose of evasion, or as a color for a patent." Novelty consists in "producing a new substance, or an old one in "a new way, by new machinery, or a new combination of

1 *Many vs. Jagger, 1 Blatchford, 372.*

"the parts of an old one, operating in a peculiar, better, "cheaper, or quicker method, a new mechanical employ- "ment of principle already known."[1]

"We think it may safely be laid down as a general rule, "that, where the machines are substantially the same, and "operate in the same manner to produce the same result, "they must be in principle the same. I say *substantially*, "in order to exclude all formal differences; and, when I "speak of the same result, I must be understood as meaning "the same *kind* of result, though it may differ in extent."[2]

"The inquiry always is, whether the *principle* of the two "machines is the same. If the *principle* on which the ma- "chinery works is the same, and the effect is similar in "both, in contemplation of law the machines are iden- "tical."[3]

What constitutes an identity of principle has been already indicated. When two machines employ either the same mechanical powers, or such substitutes as are within the knowledge of a mechanic skilled in the business to which the machines appertain, the two machines operate on the same principle; otherwise not.

When two processes have the same steps or modes of action, or such substitutes therefor as are within the knowledge of a person skilled in the business to which the processes appertain, then they involve the same principle of operation; otherwise not.

When two compositions of matter have the same ingredients in the same proportions, or other ingredients which are, within the knowledge of a person skilled in the business to which the compounds appertain, substitutes therefor, then

1 *Whitney vs. Emmett, 1 Baldwin, 311.*
2 *Gray vs. James, 1 Peters, 398.*
3 *Brooks vs. Bicknell, 3 McLean, 262.*

the two compositions of matter are combined upon the same principle; otherwise not.

When two manufactures have the same or similar parts or properties, and will answer a similar purpose by means of similar parts or properties, then they are constructed upon the same principle, and not otherwise.

A difference of result *in kind* is a different thing from a difference of result *in degree*. When of two machines for making nails, one will produce more nails of the same kind and in the same time than the other, that is a mere difference in degree and not in kind, and the same is true as to any two machines for producing articles of the same kind. When of two processes, say for dyeing wool, one will dye more wool in the same time than the other, that is only a difference in degree.

Results that are different in kind must have different properties, and this applies directly to manufactures and compositions, as well as to effects produced by machines and processes. In comparing an alleged invention with some prior existing thing, in order to ascertain if the invention have patentable novelty, it may be inquired,— First, Does the invention involve any difference of principle in operation? or, Second, Does it produce any new result, having new properties and answering new purposes? If either question can be answered in the affirmative, then the two things are not substantially identical, and not otherwise.

Bearing of Utility upon Novelty. The tests of novelty, as just presented, are only applicable in full force and strictness when one is considering the question of infringement; that is, when one is trying to ascertain whether or not a certain thing infringes upon a certain patent. It

has already been stated, that a thing may be patentable, and yet be an infringement of a prior existing patent; for the thing may be merely an improvement upon the thing claimed in the patent.

When an invention is presented at the Patent Office as subject-matter for a patent, the question of novelty comes up under a different aspect from the question of substantial identity in a patent suit,—that is, a mere difference of result in degree may be almost or quite conclusive evidence of patentability,—and, if it can be shown that a machine, process, manufacture, or composition of matter is of superior utility in the matter of *cheapness* or *quality*, although the result be the same in kind as before, that is strong and often conclusive evidence of patentable novelty, and this whether the prior thing with which the alleged invention is compared be a patented thing or not.

"Where the utility of a change and the consequences "resulting therefrom (in a machine) are such as to show "that the inventive faculty has been exercised,—though, "in point of fact, the change was the result of accident,— "the requisite test of a sufficient amount of invention may "exist."[1]

"Whenever the change in the arrangement of a machine "or invention, and its consequences taken together, are "considerable, there is sufficiency of invention to support "a patent. When the change, *however minute*, leads to "consequences and results of great practical importance, "this condition is satisfied; but not when the *consequences* "are inconsiderable, and the change also inconsiderable."[2]

And not only when the patentability of an alleged invention over some prior thing is under consideration, but when

1 *Everson vs. Ricard, Law's Digest, 422, sec. 20.*

2 *Walsh, ex parte Appeal Cases, Dist. Columbia, Law's Digest, 423, sec. 31.*

in considering whether a certain thing is an infringement of a patent, if it is doubtful whether the two devices involve the same principle of operation, then the comparative utility of the two devices under consideration becomes of great and sometimes paramount importance. In discussing this question, a learned judge said: "If the "changes made by the defendant have rendered his wheel "one of greater utility than the plaintiff's, such utility is "evidence that some new principle, or mechanical power, "or new mode of operation, producing a new kind of "result, has been introduced. And the greater such "utility, the stronger is such evidence. And if a mani- "fest and very high degree of utility is obtained by such "changes, it becomes full proof and conclusive, that a "new principle or mechanical power, or new mode of "operation, producing a new kind of result, has been "introduced. From our inability to penetrate the secrets "of nature, we may not be able to detect the new prin- "ciple or power, otherwise than by its effects. But this "utility must be derived from the changes introduced,— "not from the use of better material, or greater skill or "care in the manufacture."[1]

In another case, the learned judge said: "If one ma- "chine, which is alleged to be an infringement of another, "produces a different result, or, in other words, is of "greater utility than the preceding machine, it may be "some evidence of a difference, a substantial difference "between them; and the utility of the one over the other "may be so great as to be satisfactory evidence that some "new principle is involved, and that it is not substantially "the same. This is sometimes coupled, too, in considering

1 *Many vs. Sizer, 1 Fisher's Pat. Cases, 24-28.*

"the evidence, with the mechanical differences. The me-
"chanical differences may be sufficient to show that the
"two machines are not substantially the same. The differ-
"ence of result and utility may be so great as to be satis-
"factory to the jury. They may be authorized to receive
"it as satisfactory, if it is of so very high a nature. And
"it may be that neither of these alone would be satisfac-
"tory; yet the mechanical difference and the difference
"of utility, taken together, may be sufficient to satisfy the
"mind."[1]

And the same doctrine runs through many other cases.[2]

Prior Abandoned Experiments. The novelty of a practical and successful invention can not be destroyed by the exhibition of prior abandoned experiments tending in the same direction. Nothing short of a practically successful prior invention, actually reduced to practice and (unless the question arises in connection with the topic of prior invention, a subject hereinafter considered) in public use, can destroy the patentable novelty of an invention which has been perfected, and made practical and successful.[3]

In the case of Cahoon *vs.* Ring (vol. i. Fisher's Patent Cases, p. 409), the judge said to the jury, of an alleged prior machine like Cahoon's seed-sower, said to have existed prior to Cahoon's invention: "Should you find that "it was made and completed prior to the Cahoon inven-
"tion, and that it does embody the improvements in the "Cahoon patent, as already defined and explained, you

1 *Johnson vs. Root, 1 Fisher's Pat. Cases, 362.*

2 *Judson vs. Moore, 1 Fisher's Pat. Cases, 544. Singer vs. Walmsley, 1 Fisher's Pat. Cases, 558. Judson vs. Cope, 1 Fisher's Pat. Cases, 615. Eames vs. Cook, 2 Fisher's Pat. Cases, 140. Magic Ruffle Co. vs. Douglas, 2 Fisher's Pat. Cases, 330. Carter vs. Baker, 4 Fisher's Pat. Cases, 404. Stanley Works vs. Sargent, 4 Fisher's Pat. Cases, 443.*

3 *Washburn vs. Gould, 3 Story, 133. Ball vs. Murry, 10 Pennsylvania, 112. Howe vs. Underwood, 1 Fisher's Pat. Cases, 160. Judson vs. Moore, 1 Fisher's Pat. Cases, 544.*

"will then inquire whether it was, in point of fact, a ma-
"chine completed and reduced to practice, in contra-
"distinction to an experimental machine, or a machine
"made by the supposed inventor, in the prosecution of
"experiments and inquiries; and that, unless it appears
"to your satisfaction, that such machine was actually used
"as a seed-sower in sowing seed for agricultural purposes,
"you are warranted in presuming that it was a mere experi-
"ment; and, if so, you are instructed that it would not
"invalidate the plaintiff's patent."

In the celebrated case of Goodyear *vs.* Day (vol ii. Wallace, Jr., p. 298), upon Goodyear's rubber patent, the judge said: "The testimony shows that many persons "had made experiments—that they had used sulphur, lead, "and heat—before Goodyear's patent, and probably be-"fore his discovery. But to what purpose? Their experi-"ments ended in discovering nothing, except, perhaps, "that they had ruined themselves. The great difference "between them and Goodyear is, that he persisted in his "experiments, and finally succeeded in perfecting a valu-"able discovery; and they failed. It is usually the case, "when any valuable discovery is made, or any new machine "of great utility has been invented, that the attention of "the public has been turned to that subject previously; "and that many persons have been making researches and "experiments. Philosophers and mechanicians may have, "in some measure, anticipated, in their speculations, the "possibility or probability of such discovery or invention; "many experiments may have been unsuccessfully tried, "coming very near, yet falling short of the desired result. "They have produced nothing beneficial. The invention, "when perfected, may truly be said to be the culminating "of many experiments, not only by the inventor, but by

"many others, and he may have profited indirectly by the "unsuccessful experiments and failures of others; but it "gives them no right to claim a share of the honor or the "profit of the successful inventor. It is when speculation "has been reduced to practice, when experiment has re- "sulted in discovery, and when that discovery has been "perfected by patient and cautious experiments,—when "some new compound, art, manufacture, or machine has "been thus produced, which is useful to the public, that "the party making it becomes a public benefactor, and "entitled to a patent."

In a subsequent case, the learned judge quoted the above decision in the case of Goodyear *vs.* Day, and then said: "So I say in reference to this case: it does not matter how "many experiments have been tried by different inventors, "if they failed, if their experiments were never perfected, "if they were never brought into use,—and, by that, I do "not mean general use, put to perform the functions of the "plaintiff's machine or any of the perfected machines "of the day,—if they rested in experiment alone, they "were not of such a character as to deprive subsequent "inventors of the benefit of their inventions, if they "brought them into use. The man who brings his inven- "tion before the country, and into actual use, is the one "to be protected; for he is the one who confers a benefit "upon the country."[1]

The same doctrine is fully enunciated in at least one later case.[2]

As it is purposed to discuss, in subsequent pages, what constitutes a *public use*, that question will not be discussed

1 *Singer vs. Walmsley, 1 Fisher's Pat. Cases, 576.*
2 *Hayden vs. Suffolk Mfg. Co., 4 Fisher's Pat. Cases, 101.*

just here; but we will content ourselves, now, with stating that an invention, in order to destroy the novelty of a subsequent invention, must not only have been perfected, but it must have been in public use. The reason of this is perfectly plain, when we remember what the policy of the patent law is: it is to reward the man who first gives the public the benefit of the discovery or invention; and, if an alleged prior inventor has not put his invention into public use,—that is, put it into such condition that the public has had, or *might have had*, a knowledge of the invention,—then the subsequent inventor who does fully disclose the invention to the public, is the one that does the public that service which the public deems worthy of reward.

The topics so far treated in this chapter have referred solely to things which existed prior to the *invention* of the thing under consideration. We have yet to consider that though an inventor, at the time he makes his invention, may be the original and first inventor, in the sense of the patent law, yet he may so conduct himself afterward with reference to the invention, that, when he comes to make his application for a patent thereon, the invention may have lost its patentable novelty; that is, he may so act, that he will be adjudged to have *abandoned* his invention to the public, or he may have allowed it to be in public use for more than two years prior to application,—and, in either case, the invention will have lost its patentable novelty. These topics of abandonment and public use will be discussed farther on.

CHAPTER IV.

UTILITY.

THE statute requires that a patentable invention must be useful as well as new. The topic of patentable utility can be soon disposed of. It has two phases or aspects, — one absolute and the other comparative. The absolute phase is this: What utility must an invention have to render it patentable? The comparative phase is: When an alleged invention is being compared with some prior thing, in order to ascertain if the two are substantially identical, does the alleged invention possess such superior utility over the prior thing as to show that some new principle is involved in its operation?

Absolute Utility. The statute, in requiring that a patentable invention shall be useful, does not require that it shall possess any high degree of utility; if it is not positively noxious, immoral, or hurtful, and possesses *any* utility, that suffices. It need not be more useful than other things of its class, — it need not be as useful even, — and it is of no moment that an invention will not accomplish all that a sanguine inventor claimed for it.[1] The only question is, Does the invention possess *any* utility? Entire and absolute failure to accomplish the purpose for which an invention was intended, will render a patent granted for such an invention void; but, if it will accomplish such purpose in any degree, that is sufficient.

1 *Eames vs. Cook, 2 Fisher's Pat. Cases, 146.*

In a suit brought for the infringement of a patent on a pump, the defendant claimed that the plaintiff's pump, in order to be patentable, must be better than other pumps, so as to supersede the pumps before in use. The judge said: "I do not so understand the law. . . All that the law "requires is, that the invention should not be frivolous, or "injurious to the well-being, good policy, or sound morals "of society. The word *useful*, therefore, is incorporated "into the act in contradistinction to mischievous or im- "moral. . . Whether it be more or less useful, is a "circumstance very material to the interest of the patentee, "but of no importance to the public."[1]

In a later case, the judge said: "All that the law re- "quires is, that the invention shall not be frivolous or "dangerous. It does not require any *degree* of utility; it "does not exact that the subject of the patent shall be "better than anything invented before, or that shall come "after. The invention shall not be frivolous; if it is "useful at all, that suffices."[2]

The same doctrine is fully enunciated in many other cases.[3]

But an entire and absolute lack of utility will render a patent void.[4]

Comparative Utility. The utility of a device, as compared with that of a prior device for the same purpose, is often a question of great importance. The courts hold that, where it is doubtful whether the two devices do not

1 *Lowell vs. Lewis, 1 Mason, 186.*

2 *Hoffheins vs. Brandt, 3 Fisher's Pat. Cases, 236.*

3 *Whitney vs. Emmett, Baldwin's Circuit Court Reports, 309. Wilbur vs. Beecher, 2 Blatchford, 137. McCormick vs. Many, 6 McLean, 556. Earle vs. Sawyer, 4 Mason, 6. Bedford vs. Hunt, 1 Mason, 303. Wintermute vs. Redington, 1 Fisher's Pat. Cases, 239. Page vs. Ferry, 1 Fisher's Pat. Cases, 298.*

4 *Langdon vs. De Groot, 1 Paine, 203, Law's Digest, 435, par. 52.*

involve the same principle of operation, their comparative utility may be taken into consideration. If, as compared with a prior device, an alleged invention possesses superior utility, that is evidence going to show that the later device involves a different principle of operation from the former, and hence is patentably different; and, in this case, there are two things to be taken into consideration: first, the amount of apparent change, and, second, the amount of superior utility. If the change is small and the increased utility small, that is weak evidence toward establishing patentable difference; if the change is small and the utility largely increased, that is stronger evidence of patentable difference; and, if the change is considerable and the increased utility considerable, that will generally, if not always, amount to conclusive evidence that the two things are not substantially identical. This subject was as fully discussed as the limits of this work will allow, in the chapter on NOVELTY, under the head of "The Bearing of Utility upon Novelty," to which the reader is referred, where he will find quotations from the decisions of judges, and other cases cited in the foot-notes.

CHAPTER V.

PRIOR USE.

THE statute prescribes, in section 24 of the act of July 8, 1870, that an invention, to be patentable, must have been "not known or used by others in this country, " . . before his (the inventor's) invention or discovery "thereof."

It will be observed, that such prior use or knowledge, in order to defeat a subsequent patent, must be in this country. A mere prior use in a foreign country will not invalidate a patent subsequently granted here for the same thing, unless it can be shown that the alleged inventor derived his knowledge from the foreign use, in which case he could not legally and truly make oath that he was an inventor at all. A prior use in a foreign country must not be confounded with a prior foreign publication of the invention; for that destroys a subsequent inventor's right to a patent, on the ground that the means of knowledge of the invention were in the possession of the American public previous to the origination of the same by the subsequent inventor, so that he did not give to the public that valuable thing which the law deems worthy of a reward.

We will now examine, by the light of judicial decisions, as to what constitutes such a prior use of an invention in this country as will deprive a subsequent inventor of a right to a patent therefor. This use, let it be remembered, is a use "by others" than the inventor.

In the case of Bedford *vs.* Hunt (1 Mason, 302), Judge Story (p. 304) uses the following language: "It has been "argued by the plaintiff, that the defense set up by the "statute does not apply, except in cases where the inven- "tion, or (as the statute expresses it) the thing originally "discovered, has been before generally known, and in gen- "eral use, among persons engaged in the art or profession "to which it properly belongs. But I do not so under- "stand the language of the statute. To entitle a person to "a patent as a first inventor, it is certainly not necessary "for him to establish that he has put his invention into "general use, or that he has made it generally known to "artisans engaged in the same business. And yet, upon "the argument we are considering, unless it were so gener- "ally known and in use, he would be defeated by a "patentee who was a subsequent independent inventor. "The intent of the statute was to guard against defeating "patents by setting up of a prior invention which had "never been reduced to practice. If it were the mere "speculation of a philosopher or mechanician, which had "never been tried by the test of experience, and never "put into actual operation by him, the law would not "deprive a subsequent inventor, who had employed his "labor and talents in putting it in practice, of the reward "due to his ingenuity and enterprise. But, if the first "inventor reduced his theory to practice, and put his "machine or other invention into use, the law never could "intend that the greater or less use, in which it might be, "or the more or less widely the knowledge of its existence "might circulate, should constitute the criterion by which "to decide upon the validity of any subsequent patent for "the same invention. I hold it, therefore, to be the true "interpretation of this part of the statute, that any patent

"may be defeated by showing that the thing secured by "the patent had been discovered and put in actual use "prior to the discovery of the patentee, however limited "the use or the knowledge of the prior discovery might "have been."

This was one of the first cases upon prior use. It discusses, in the same breath, what are, now, two distinct topics or questions, "prior use" and "prior invention." The topic of "prior use" comes up when it is attempted to show that a patented thing had been in use prior to the invention of the patentee, and this without reference to the question as to whether the prior user intended or is still intending to get a patent therefor. Indeed, in discussing prior use, it is taken for granted that a prior user did *not* intend to take a patent for the invention; and, upon principle, the real question is, Was the prior use such a one that the public had, or might have had, a knowledge of the invention? The name given to such a use as this is that of "public use." The question of "prior invention" comes up when different inventors are struggling to show, each for himself, that they are prior inventors; and the principles involved are substantially other and different from those involved in the discussion of prior use, as will be shown in a subsequent chapter.

So far, then, as the reasoning of the judge, in the above case, applies to the topic of prior invention, it is to be laid out of the present discussion, involving almost the bodily transfer of the case to another field. But the actual words of the judge are not repugnant to the belief of the present writer, that a "prior use" must be "public use," to defeat a subsequent patent. The judge says the thing must have been put into "actual use," in distinction from an experimental use, — the obvious meaning of which is, that

the thing must have been put into use for business purposes, for profit, which constitutes, as will be hereafter shown, a "public use."

In a subsequent case,—Adams *vs.* Edwards, November, 1848 (vol. i. Fisher's Patent Cases, p. 1),—Judge Woodbury said (p. 12): "If a man has an invention and uses it "privately, and nobody knows of it, then the use of it can "not debar another person from inventing or patenting it. "What is the evidence of a public use, as opposed to a "private use? It need not be a general use by the com- "munity; but it must be an open use, however, so that the "structure and *modus operandi* are apparent." And on page 13: "Was the use public in these cases, is one chief "ingredient under this head. Was such a safe as Connor's "used by the community? Was it actually sold in the "stores? . . But if one man, alone, kept it—made it "for himself, kept it in his counting-room or in his cellar, "—it would be a private use."

The judge was talking about "prior use" in this case, so that the above decision is fully to the effect, that a "prior use," to be effective against a subsequent inventor, must be a "public use."

In the case of Many *vs.* Sizer, January, 1849 (vol. i. Fisher's Patent Cases, p. 17), Judge Sprague said: "The "article must be completed for public use, and the result "must be known." This case does not state whether the use must be a use *in* public or not.

In the case of Parker *vs.* Hulme, November, 1849 (vol. i. Fisher's Patent Cases, p. 44), Judge Kane said (p. 53): "It is not enough for the defendant to show that wheels "like the patented ones were *made*, but that he must also "show that they were *used*, before the plaintiff's inven- "tion." Neither does this case say whether or not the use

must be in public; but, from the circumstances, that is the natural inference.

In the case of Colt *vs.* Massachusetts Arms Company, August, 1851 (vol. i. Fisher's Patent Cases, p. 108), Judge Woodbury said (p. 115): "It is no matter whether those "prior inventions were patented or not, if they existed, "if they were discovered, if they were used." Here, again, is no explicit declaration as to whether the use need be in public or only private; but the natural inference is, that it must be a use in the ordinary manner and course of business, where the public would or *might* see it,—in other words, a use *in public*.

The case of Poppenhusen *vs.* New-York Gutta-percha Comb Company, 1858 (vol. ii. Fisher's Patent Cases, p. 62 —see p. 68), agrees with the three cases last cited.

In the case of Cahoon *vs.* Ring, February, 1859 (vol. i. Fisher's Patent Cases, p. 397), Judge Clifford said to the jury, of an alleged seed-sower in prior use (p. 409): "Un- "less it appears to your satisfaction that such machine was "actually used, as a seed-sower, in sowing seed for agricul- "tural purposes, you are warranted in presuming that it "was a mere experiment." And again: "Upon this same "subject you are also instructed, that, as a single specimen "only of such a machine was made, . . if you find, "from the evidence, that the same was kept in his own "possession, from the knowledge of the public, and was "subsequently broken up, etc., . . so that the public "could not derive the knowledge of it from the machine "itself," that would not affect the subsequent inventor's right to a patent.

The case of Singer *vs.* Walmsley, February, 1860 (vol. i. Fisher's Patent Cases, p. 558—see p. 577), quoting and relying upon the case of Treadwell *vs.* Bladen, a very early

case (vol. iv. Washington, p. 704), seems to recognize the principle, that a mere experimental prior use is sufficient to defeat a subsequent patent, — not, however, saying whether the public had or might have had knowledge of such experimental use.

In the case of the Union Sugar Refinery *vs.* Matthiesen, November, 1865 (vol. ii. Fisher's Patent Cases, p. 600), Judge Clifford held (p. 624) that the alleged prior machine must have been "reduced to practice in an operative machine" — that it must have been a "successful reduction to practice."

The patent franchise is given to an inventor, because he is the first to give the knowledge of his invention *to the public*, and, if some one else has not done this before him, there is no reason why he does not give to the public that thing that the public values. Keeping this principle and the decisions just quoted in view, we have no hesitation in saying that a prior use, to avail against a subsequent inventor, must be a use *in public*, — a use that the public know of, or, from the conditions of the use, had full liberty to know of. What constitutes a use *in public*, will be discussed subsequently under the head of "Public Use."

The thing that is alleged to have been in prior use must not only have been used in public, in order to avail against a subsequent inventor, but it must have been a complete and practically successful invention. No matter how many experiments had been previously made, no matter if a subsequent inventor knew all about them, if such experiments stopped short of perfection and practical success, they can not avail against the subsequent inventor.[1]

1 *Hayden vs. Suffolk Mfg. Co., 4 Fisher's Pat. Cases, 86. Roberts vs. Reed Torpedo Co., 3 Fisher's Pat. Cases, 629. Coffin vs. Ogden, 3 Fisher's Pat. Cases, 640.*

CHAPTER VI.

PRIOR PUBLICATION.

THE statute requires (section 24 of the act of July 8, 1870) that an invention, in order to be patentable, must have been "not patented, or described in any printed "publication in this or any foreign country, before his "(the inventor's) invention or discovery thereof."

When discussing the topic of "prior use," it was seen that the mere fact of the use of an invention in a foreign country prior to a subsequent inventor's production thereof, has no bearing on his right to a patent, provided he did not know of such foreign use. The case is different with reference to prior publication. If a device has been patented or described in a printed publication, in a foreign country, prior to the invention thereof by an inventor who seeks a patent here, that is fatal to such an inventor's claim, just as much as though the patenting or describing were done here. The reason for this distinction is plain. The mere fact of a prior use in a foreign country raises no presumption that a knowledge of such use is accessible to the American public, because such use is essentially a *local* as well as a *foreign* use; while, if the thing were patented or described in a printed publication, that raises a presumption that a knowledge of the thing is accessible to the American public, because books and patent records, no matter in what locality produced, find their way to all parts of the civilized world.

It should be remembered, that "the publication, to void

"the patent, must be anterior to the discovery of the "patentee. It is not sufficient that it should be anterior "to the application to the Commissioner for a patent."[1]

Where it is attempted to rebut or destroy the novelty of an alleged invention by a prior printed publication or a prior patent, the description contained in such publication or patent must be so full, clear, exact, and precise, that a properly skilled person could, working by such description, and without any inventions, trials, experiments, or additions of his own, construct or put in practice the invention; and it, when so constructed or put in practice, must embody the same principle of operation and produce the same result as the alleged invention, or such prior publication will not be held to be a legal anticipation. Mere hints at a thing, or general directions how to accomplish a result, will not do; the prior publication, to have any effect, must be as full, clear, and exact as the specification of a patent is required to be.

"Where the defense that a mechanical contrivance, "claimed to be essentially similar to that covered by the "plaintiff's claim, is set up, and the proof relied on is "a description of such structure, contained in a printed "publication, such description must have been sufficiently "full and precise to have enabled a mechanic to construct "it, and must also have been, in all material respects, like "that covered by or described in the plaintiff's patent."[2]

In one case, the judge held that a book of plates or drawings, without any printed description of the plates, is not a "printed publication" in the sense of the patent law.[3]

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1 *Bartholomew vs. Sawyer, 1 Fisher's Pat. Cases, 520. Judson vs. Cope, 1 Fisher's Pat. Cases, 615.*

2 *Parker vs. Stiles, 1 Fisher's Pat. Reports, 336. Coleman vs. Liesor, Law's Digest, 609, par. 7.*

3 *Judson vs. Cope, 1 Fisher's Pat. Cases, 618.*

In another case, it was held that a description in an *unprinted* book is not a legal anticipation of a later invention.[1]

In a later case, brought upon a patent to one Clark, for a steam-regulator, the defendant set up that the same thing was shown in a prior patent to one Brunton. In his charge to the jury, the judge said: "You will then look at Brunton's description, and see if you find there substantially "described the invention of Clark; to wit: a mechanism "so organized and connected to a steam-generator, that, "when properly set by the engineer or operator, at a given "pressure in the boiler or generator, it will, automatically, "by force of the pressure in the boiler or generator, open "and shut the damper, as the pressure in the boiler or generator rises above or falls below the figure at which the "mechanism is set. If you find in Brunton's patent such "a mechanism, *so organized*, then, of course, Clark's invention is not new. But, if you do not find such a "mechanism, not only substantially the same in its particular parts, but so *organized* as that, when set in "operation, it will produce substantially the same results "in substantially the same way, then Clark's patent is "valid, unless the change made by Clark is so obvious "that it required no invention or labor of thought to make "that change."[2]

1 *Keane vs. Wheatley, 9 American Law Register, 65.*

2 *Clark Pat. Steam & Fire Regulator Co. vs. Copeland, 2 Fisher's Pat. Cases, 227. Roberts vs. Dickey, 4 Fisher's Pat. Cases, 544.*

CHAPTER VII.

PRIOR INVENTION.

SECTION 61, paragraph second, of the act of July 8, 1870, makes it a good defense against an action on a patent, brought by a patentee, "that he had surreptitiously or unjustly obtained the patent for that which "was, in fact, invented by another, who was using reasonable diligence in adapting and perfecting the same."

Prior invention is a different thing from prior use. When the latter defense is set up, it is of no especial consequence whether the inventor of the prior thing was intending to get a patent therefor or not; while, in setting up the former, it is material that the prior inventor intended to get a patent. Again, in setting up the defense of prior use, it is necessary to show that the prior device was reduced to practice,—put into actual operation and use,—and, on principle, this use should be one accessible to the public; while, in setting up the defense of prior invention, it is not necessary that the invention should have ever been perfected or put in practice, or into actual use at all. We shall see, in this chapter, that the first, strongest, and best title to a patent is that of an inventor making a prior conception of the invention in point of time, and then exercising due diligence afterward in perfecting and adapting it, and putting it in practice; and that this title will prevail against a subsequent inventor who has obtained a patent.

One judge, at least, has distinctly stated a difference between prior invention and prior use. He said: "Here the

"reliance is not on prior use; therefore, it is of no conse-
"quence whether it (the invention) is abandoned or not,
"but whether it was the prior invention."[1]

The question of prior invention comes up for discussion before the Patent Office much oftener than in the United States courts. This topic is a comparatively rare one in the courts, but it comes up constantly before the Patent Office in the proceedings technically known as "interferences," which are proceedings instituted for the purpose of determining the question of *priority of invention* between two or more parties claiming the same patentable subject-matter. An interference is declared, —

FIRST, — When two or more parties have applications pending before the Office at the same time, and their respective claims conflict in whole or in part. When two or more applications are pending at the same time, in each of which a like patentable invention is shown or described, but not specifically claimed in all of them.

SECOND, — When an applicant, having been rejected upon an unexpired patent, claims to have made the invention before the patentee.

THIRD, — When an applicant for a reissue embraces in his amended claim any new or additional description of his invention, or enlarges his claim, or makes a new one, and thereby includes therein anything which has been claimed or shown in any patent granted subsequent to the date of his original application, or in any pending application; provided there is reason to suppose that such subsequent applicant or patentee may be the first inventor.

1 *Colt vs. Massachusetts Arms Co., 1 Fisher's Pat. Cases, 116.*

The fact that one of the parties has already obtained a patent, does not prevent an interference; for, although the Commissioner has no power to cancel a patent already issued, he may, if he finds that another person was the prior inventor, give him a patent also, and thus place both parties on an equal footing before the courts and the public.

The cases in the courts which have distinctively touched upon the topic of prior invention are so few in number, that we can, perhaps, treat the topic in no better manner than to cite these decisions, or at least the greater part of them, chronologically, and then deduce certain rules therefrom.

In the case of Reed *vs.* Cutter (vol. i. Story, p. 590), tried in October, 1841, Judge Story said (p. 599): "In a "race of diligence between two independent inventors, he "who first reduces his invention to a fixed, positive, and "practical form would seem to be entitled to a priority "of right to a patent therefor. The clause . . now "under consideration seems to qualify that right, by pro- "viding that, in such cases, he who invents first shall have "the prior right, if he is using reasonable diligence in "adapting and perfecting the same, although the second "inventor has, in fact, first perfected the same, and re- "duced the same to practice in a positive form."[1]

The principles set forth in the case just cited were recognized and followed in the case of Colt *vs.* Massachusetts Arms Company (vol. i. Fisher's Patent Cases, p. 108), August, 1851, where two patents were in conflict. Judge Woodbury instructed the jury that they might go back and find who made the prior invention; he said (p. 120):

1 *Woodcock vs. Parker, 1 Gal. 438.*

"The date of the invention is the date of the discovery "involved, and the attempt to embody that in some ma- "chine — not the date of perfecting the instrument. . . "If the invention was made — if it was set forth in a "machine which would and did discharge a fire, — that is "all which is necessary to constitute the invention."

In the case of Ransom *vs.* The Mayor of New-York (vol. i. Fisher's Patent Cases, p. 252), December, 1856, Judge Hall said (p. 272): "If the plaintiffs did not use reason- "able diligence to perfect the invention patented, after the "idea of it was conceived, and in the meantime other "persons not only conceived the idea, but perfected the "invention, and practically applied it to public use, before "the invention of the plaintiffs had been so far perfected "that it could be applied to practical use, the plaintiffs' "patent is void, because they were not the first and original "inventors of the thing patented."

In the case of Johnson *vs.* Root (vol. i. Fisher's Patent Cases, p. 351), October, 1858, Judge Sprague said (p. 369): "If, gentlemen, the invention was perfected, — if Mr. "Johnson used reasonable diligence to perfect it, — then "he had a right to have it incorporated into his patent, "and to supersede those who had intervened between his "first invention or discovery and his subsequent taking out "of his patent. If he had not perfected it, and did not "use due diligence to carry it into effect, and in the mean- "time, before he got his patent, somebody else had invented "and used, and incorporated into a useful, practical ma- "chine, that mode of feeding, then he could not, by a "subsequent patent, appropriate to himself what was em- "braced in the former machine."

The case of Ellithorpe *vs.* Robertson (vol. ii. Fisher's Patent Cases, p. 83), February, 1859, was an interference

case carried to the United States court. Judge Ingersoll said (p. 85): "To defeat a patent which has been issued, "it is not enough that some one, before the patentee, con- "ceived the idea of effecting what the patentee accom- "plished. To constitute such a prior invention as will "avoid a patent that has been granted, it must be made to "appear that some one, before the patentee, not only con- "ceived the idea of doing what the patentee has done, but, "also, that he reduced his idea to practice, and embodied "it in some practical and useful form. The idea must "have been carried into practical operation. The making "of drawings of conceived ideas is not such an embodi- "ment of such conceived ideas into practical and useful "form as will defeat a patent which has been granted."

In order to comprehend the exact force of the words just quoted, it must be taken into consideration, that the later applicant for the patent did not allege in his bill of complaint to the court that he had used reasonable diligence in adapting and perfecting his invention (see foot of page 86, etc.), so that this decision applies only where one party has a patent and the other can not show, in addition to prior conception on his part, that he used reasonable diligence in adapting and perfecting the invention.

In Cox *vs.* Griggs (vol. ii. Fisher's Patent Cases, p. 174), April, 1861, Judge Drummond said (p. 176): "It is the "right and privilege of a party, when an idea enters his "mind in the essential form of invention, — inasmuch as "most inventions are the result of experiment, trial, and "effort, and few of them are worked out by mere will, — "to perfect, by experiment and reasonable diligence, his "original idea, so as not to be deprived of the fruit of his "skill and labor, by a prior patent, if he is the first "inventor."

There are other decisions to the same effect in White *vs.* Allen (vol. ii. Fisher's Patent Cases, p. 440 — see p. 446), tried in November, 1863, and in Reeves *vs.* Keystone Bridge Company (Patent Office Gazette for 1872, p. 466).

From these cases, a few plain rules can be deduced: —

FIRST, — The first, best, and strongest title to a patent is that of an inventor who makes the first conception of the invention and afterward exercises due diligence in adapting and perfecting the same. To such a title as this, the title of an inventor who was subsequent to conceive, but first to reduce to practice, must give way, as well as the title of a subsequent inventor who was the first to take out a patent.

SECOND, — The second best title to a patent is that of an inventor who was the first to reduce to practice, and this without reference to the time when the invention was conceived. It will not prevail against an inventor who was first to conceive and afterward uses due diligence in adapting and perfecting the same; but it will prevail against one whose strongest title is the obtaining of a patent.

THIRD, — The third best title is that given by the issue of a patent. Such a title as this must give way to the title of an inventor who was the first to conceive and who used due diligence afterward in adapting and perfecting the invention, and also to the title of an inventor who, as compared with the patentee, was the first to reduce to practice. It would seem, on principle, that the title of the first applicant for a patent should stand on the same footing as that of a party who was first to procure the issue of a patent.

FOURTH, — It would seem, on principle, that, when a party has none of the three titles just specified, the inventor should prevail who can show a continuous line of effort to adapt and perfect back to the earliest date.

FIFTH, — In the absence of any and all of the foregoing data whereon to base a decision, it would seem, on principle, that the inventor should prevail who was the first to embody or portray the invention, either by a machine, model, process, or drawing, so that a person skilled in the art to which it appertains, could therefrom reduce it to practice. A mere oral description has been held sufficient for this purpose.

Conception of an Invention. It becomes important to ascertain what constitutes conception of an invention such as the law recognizes. This is clearly stated by Judge Lowell as follows: "Neither does it mean the first "moment at which he (the inventor) conceived the idea "that it would be a good thing to do that. It means not "only when he conceived that such a thing would be a de-"sirable thing to do, but when he had conceived the idea "of how to do it substantially as he has done it."[1] The result to be effected must not only be in the inventor's mind, but he must have in his mind's eye substantially the means by which that result is to be effected. The date of such conception an inventor is allowed to prove by sketches or models he made at the time, or even by declarations or descriptions he gave to other persons.

There is no limit of time within which an inventor must perfect and mature his invention; that is, there is no limit to the date to which he may carry back the date of his conception, provided he can show that he exercised due diligence afterward in perfecting and adapting it. A machine might be so complicated that a long series of year might not suffice wherein to perfect and mature it; but, of

1 *Woodman vs. Stimpson, 3 Fisher's Pat. Cases, 105.*

course, such cases are rare. The simplicity or complexity of the invention will generally give a criterion upon this point, though an exception to this rule will at once occur to any one at all conversant with the history of important American inventions, — the case of Goodyear, inventor of hard rubber.

Reasonable Diligence. The one important qualification of the diligence required, is that it shall be reasonable. Sickness, poverty, or other circumstances beyond the control of the inventor, may excuse his laying the invention by for a time; but he can not lay the invention by, simply because it is pleasanter, more profitable, or more convenient to attend to something else, unless such consideration amounts to an actual necessity. He is required to devote himself to the invention with all the continuity that is compatible with the discharge of the duties properly incumbent upon a man in his station, occupation, and general situation. The plea of poverty is the one that is, perhaps, oftenest set up, but is a plea that requires careful scrutiny.

"The measure of property which one must possess before "he is required to exercise any diligence to prosecute his "right, is not to be found in the statute. It is an excuse "very readily made, which yet should not be too readily "listened to. If a man be utterly destitute of money, "without friends, and incapable thereby of prosecuting an "enterprise, much indulgence may be shown him; but "where he has the means of carrying on enterprises of a "kindred sort, equally demanding money and friends, and "does carry them on, his election to pursue those other "enterprises will not be regarded, in the law, as an excuse "for the delay in the one where valuable rights of others,

"equally meritorious as himself, and, in the outset of their "struggle, equally poor, are to be prejudiced. An election "thus made, for his supposed advantage or gratification at "the time, according to the plainest principles of equity, "must not be invoked to the detriment of another inno- "cent party."[1]

Two Years' Public Use. The statute allows an inventor to put his invention in use and on sale for a period not exceeding two years prior to his application for a patent therefor, and it has been supposed that this clause in some way affects the question of due diligence. Such is not the fact. The purpose and intent of this clause is to permit an inventor to use and sell for a period not exceeding two years prior to his application, without laying himself open to a charge of abandonment. The rights of rival inventors as to priority of invention are to be settled without regard to this clause. What constitutes "public use" and "abandonment" will be hereinafter discussed.

Reduction to Practice. There are two things requisite to the production of an entire and complete invention, — first, conception; and, second, reduction to practice. We have seen that conception consists in a distinct apprehension, in the inventor's mind, of the result to be attained, and the means or principles by which that result is to be reached. That step which completes the invention is reduction to practice, and this consists in the embodiment of the principles previously conceived, in tangible materials, — the making of a machine, manufacture, or composition of matter, or the actual trial of a process, — in accordance with such principles.

1 *Wickersham vs. Singer, Supreme Court Dist. of Columbia.*

The Supreme Court of the District of Columbia held, in a series of decisions, that the making of drawings is a sufficient reduction to practice, and, in one case at least, that a mere oral description is sufficient, even if unaccompanied by a drawing;[1] but we have little hesitation in saying, that, as affecting the claims of rival inventors, an oral or written description or a drawing is not, in the sense of the patent law, a reduction to practice.

In the case of Ellithorpe *vs.* Robertson (vol. ii. Fisher's Patent Cases, p. 83), February, 1859, Judge Ingersoll said (p. 86): "The making of drawings of conceived ideas is "not such an embodiment of such conceived ideas into "practical and useful form as will defeat a patent which "has been granted." The spirit of this decision is in perfect accord with many previous cases.

There is no authoritative decision of an United States court, as to what constitutes a reduction to practice, when the topic of priority of invention is under discussion, and we can only be guided by principles which are applicable to analogous questions and by the practice of the Patent Office. In discussing the question of "prior use," we saw that, when that defense is set up against a patent, the alleged prior machine or other device must have been completed and put into actual use, and that, on principle, sustained by the weight of authorities, this use should have been a public use. The case just cited shows that drawings alone can not constitute a reduction to practice in any case, so that reduction to practice requires at least the production of an operative machine or process. That is all that is required by the Patent Office, and it is all, as the present writer believes, that an United States court would

1 *Stephenson vs. Howe, 1854. Eames vs. Richards, 1859. Dietz vs. Burnham, 1859. Gibbs vs. Johnson, 1860.*

require. There is and must be a material difference between the questions of "prior use" and "prior invention." "Prior use" does not contemplate an intention, on the part of the originator of the alleged prior thing, to take out a patent therefor; and it is plain, that, unless the alleged prior thing has been in public use, the public has derived no benefit therefrom, and the subsequent inventor, who does give the invention to the public, should not be deprived of his reward. But "prior invention" contemplates an intention to take out a patent, and thus give the invention to the public; and, hence, the reason fails which would otherwise require an actual use of the machine or process, or its use in public, though it would seem only right and reasonable that the machine, or process, or compound, should have been so far perfected and tried, that its result should be certain and known. This subject was thoroughly examined by S. H. Hodges, chief of the board of examiners-in-chief in the United States Patent Office, and the result published in the numbers of the American Law Register for October and November, 1872. The first of his conclusions, at the end of his essay, is,—

"1. Before an invention can be considered as having "been so reduced to practice as to give its author, without "further effort on his part, an irrefragable title to it, if duly "assured, it must have been embodied in a practical work-"ing machine, capable of being operated to perform its "intended functions for business purposes. If not capable "of such embodiment, it must have been brought to an "equivalent state of perfection in some other way. Upon "this point, there is no conflict in our judicial tribunals."

With this statement of law, the present writer perfectly concurs. More than this, neither the decisions nor the principles of the law requires. The reason, and perhaps

the only reason, for requiring that an invention (supposing it to be a machine) shall be embodied in an operative mechanism, in order to constitute the whole of an invention, is, that it may be made certain that the new machine will work practically, — a thing that can not be known till an operative mechanism is constructed; for many an invention, that looks entirely feasible in a drawing, developes some practical and oftentimes insurmountable difficulty when put into actual construction.

The reason that underlies the requirement of actual use in a way and manner accessible to the public knowledge, when the defense of prior use is set up, is, as we have seen, quite another thing. Although, by prior conception and reasonable diligence in reduction to practice, an inventor may acquire what is at the time an irrefragable and impregnable title to a patent, yet he may, by subsequent delay and neglect, lose such right by *abandonment to the public*. He may also lose his right, by allowing the invention to be in public use for more than two years prior to his application for a patent therefor.

In the next two chapters, we shall see what constitutes "public use" and "abandonment."

CHAPTER VIII.

PUBLIC USE.

THE statute, sections 24 and 61 of the act of July 8, 1870, requires that an invention, in order to be patentable, must not have been "in public use or on sale "for more than two years prior to his (the inventor's) ap- "plication" for patent therefor. We will now see what constitutes a "public use" in the sense of the patent law.

The use, to be a a public use, must be with the "consent and allowance" of the inventor.

Previous to the act of March 3, 1839, the invention was allowed no public use whatever previous to application; but, since that time, two years' use and sale have been permitted. In the first patent act, passed April 10, 1790, it was required that the invention should not have been "before known or used," nothing being said about "consent and allowance." This act was superseded by the act of February 21, 1793, but the wording of the statute, in this respect, was not changed. The act of 1793 was superseded by the act of July 4, 1836, but, in the interval, the courts had unanimously construed the words "before known or used" to mean a use with the consent and allowance of the inventor. Thus:—

"The meaning of the words 'not known or used,' in "paragraph 1 of the act of 1793, is, that the invention for "which a patent is sought, must not have been known or "used by others. . . If, before his application, his "invention should be pirated by another, or used without

"his consent, such knowledge or use will not invalidate "the patent."[1]

This was a decision by the Supreme Court, and, of course, settled the matter; but there are numerous decisions of the circuit courts to the same effect.[2]

When the act of 1836 was drawn, this construction of the courts was put into the statute, in terms, and was kept there till the act of 1870, when it was left out, but it is there by construction. The act of 1839 merely put back the time previous to which no public use would be allowed two years, but did not affect the question under consideration, except to make it still clearer, that a use, to be a public use, must be with the consent and allowance of the inventor; so that a use unknown to the inventor, or, if known to him, carried on against his will, is not a public use in the sense of the statute.

"If it were necessary for the inventor to employ others "to assist him in the original structure or use by himself, ". . such use will not invalidate the patent."[3]

"The patentee may make experiments with his inven- "tion, or disclose it to those he may wish to consult, or "employ others to assist him in making and using it, . . "without impairing his patent. The time during which "the thing patented had been known or used, is not mate- "rial; the criterion is its public, not its private or surrep- "titious use."[4]

"If the use be merely experimental, to ascertain its value "or utility, or the success of the invention, by putting it "in practice, that is not such a use as will deprive the "inventor of his title."[5]

1 *Pennock vs. Dialogue, 2 Peters, 18-19: 1829.*
2 *Whitney vs. Emmett, 1 Baldwin, 309: 1831. Ryan vs. Goodwin, 3 Sumner, 518: 1839.*
3 *Pennock vs. Dialogue, 2 Peters, 18: Supreme Court, 1829.*
4 *Whitney vs. Emmett, 1 Baldwin, 309: 1831.*
5 *Ryan vs. Goodwin, 3 Sumner, 518: 1839.*

"The use . . must be either generally allowed or "acquiesced in, or at least unlimited in time, extent, or "object. A mere occasional use by the inventor, in trying "experiments, or a temporary use by a few persons, as "an act of personal accommodation or kindness, for a "short and limited period, will not take away a right "to a patent."[1]

"The patentee may forfeit his right to the invention, if "he constructs it and vends it to others to use, or if he uses "it publicly himself in the ordinary way of a public use "of a machine, at any time prior to the period of two "years before he makes application for a patent. That is, "he is not allowed to *derive any benefit* from the sale or use "of his machine, without forfeiting his right, except "within two years prior to the time he makes application. "If the machine was complete when it was constructed, ". . and if the patentee put it into public use, or put it "into operation himself publicly, *deriving profit* from it, "and having no view of further improvements, or of ascer- "taining its defects, then, this use having occurred anterior "to the two years, the effect would be to work a forfeiture. "It is proper to say, however, that this ground of forfeit- "ure is not favored in law, but is regarded as being some- "what harsh in its operation on individual rights. The "evidence, therefore, should be quite clear, that the use "was not by the way of experiment, or for the purpose "of perfecting the machine, in order to justify the con- "clusion that the patentee had forfeited his right to the "improvement."[2]

In one case it was alleged and proved, that the inventor had allowed the public use of his invention, an eight-wheel

1 *Wyeth vs. Stone, 1 Story, 281: 1840.*
2 *Pitts vs. Hall, 1 Fisher's Pat. Reports, 447-448.*

car, upon the Baltimore and Ohio Railroad. Of this the learned Judge Nelson said: "If the use be experimental, "to ascertain the value, or the utility, or the success of the "thing invented, by putting it into practice by trial, such "use will not deprive the patentee of his right to the "product of his genius. The plaintiff, therefore, in this "case, had a right to use his cars on the Baltimore and "Ohio Railroad, by way of trial and experiment, and to "enter into stipulations with the directors of the road for "this purpose, without any forfeiture of his rights."[1]

In a later case, where "public use" was charged against certain machines, Judge Shepley said: "You will, then, "consider whether the machines so put on sale or in public "use, were effective, operative, successful machines, com- "petent to do the work which that invention was calculated "and intended to perform; and then you will consider "whether such machines were put on sale or into public "use as matters of *profit and gain*, or whether it was for the "mere purpose of experiment and perfecting the inven- "tion."[2]

In a still later case, it was held, that the keeping of a pavement for six years on a public street, *not for profit*, but for trial, was not a public use.[3]

From these decisions, it is plain that the fact that some publicity has been given to an invention, is of no account as going to prove a public use. It would be hardly possible to give a thing greater publicity than that of a railway car on a great thoroughfare; yet that was held not to amount to a public use. The motive with which an act is done is all important here. If an invention is put into operation

1 *Winans vs. New York and Harlem Railroad, 4 Fisher's Pat. Cases, 10.*

2 *American Hide & Leather Splitting & Dressing Machine Co. vs. American Tool & Machine Co., 4 Fisher's Pat. Cases, 295: 1870.*

3 *American Nicholson Pavement Co. vs. City of Elizabeth, 3 Official Gazette, 522.*

for profit, that would seem to be a fatal use; but, if not, it is hardly possible to show that such use is not merely experimental. An inventor has a plain right to put his invention in practice, even for a number of years, so long as that is done, not for profit, but with the purpose and intent to perfect or test the invention; and it is not necessarily fatal that such use is accessible to the eyes of the public, though gross negligence in this regard would probably be fatal. The inventor can safely call the attention of other persons to the working of his invention, for the purpose of getting their judgment upon it. This forfeiture is one that the law does not favor, and the evidence would have to be strong and clear, that the use was not by way of experiment or test, in order to show a public use. The question as to whether the invention was in use *for profit*, is of vital importance.

CHAPTER IX.

ABANDONMENT.

ANOTHER statutory requirement of a patentable invention is, that it shall not be "proved to have been abandoned," and section 61 of the act of July 8, 1870, makes it a good defense to an action brought for infringement of a patent, that the patented thing had been abandoned.

It is a standard remark with judges, when about to discuss this topic, that it is a very difficult one, and nearly akin to that of public use. It is difficult, because it is always a question of fact, — that is, of opinion, — whether an invention has been abandoned. The principles of law are plain and simple enough: it is their application to any particular statement of facts that constitutes the difficulty. An invention may be abandoned at any stage of its existence, from first conception to final expiration of the patent therefor; but the facts that will show abandonment differ widely at different stages of the invention.

Abandonment after Conception and before Reduction to Practice. This is the form in which the question comes up oftenest for discussion; and it is exactly the same thing as the question of "reasonable diligence" in adapting and perfecting an invention, — a subject that has been already considered in the chapter on "Prior Invention." If an inventor is shown to have exercised reasonable diligence in reducing his invention to practice,

he has not abandoned; if not, then he has abandoned, and an abandonment may be adjudged against an inventor, irrespective of his intention to abandon. If an inventor, after conception, experiments or makes a model, and then does nothing more about the matter for years, when his inaction is not caused by poverty, sickness, or other controlling circumstances, he will, as against the claims of another and subsequent inventor, who has conceived and been diligent in reducing to practice, be adjudged to have abandoned the invention.[1]

In a suit upon a sewing-machine patent, the jury were instructed "that if they found that the plaintiff, after "having taken the machinery out of the frame, . . laid "the machinery aside, as something incomplete and requir- "ing more thought and experiment, and never intending to "reconstruct the machine, or to restore the needle-feed in "the form of an operative sewing-machine, without mate- "rial modifications or alterations, but only to preserve the "parts to be used in other inventions as circumstances "might arise, then the jury were instructed that they "would be fully warranted in finding that he deserted "and abandoned the invention, so far as respects the "needle-feed; provided they also found that he did no- "thing to restore the needle-feed in the form of an "operative machine, from November 7, 1848, to the last "of December, 1852, or the first of January, 1853."[2]

Abandonment after Reduction to Practice and before Application can take place as well as before reduction to practice. Previous to the act of March 3, 1839,

1 *Parkhurst vs. Kinsman, 1 Fisher's Pat. Reports, 161. Ransom vs. Mayor of New-York, 1 Fisher's Pat. Cases, 252, p. 270.*

2 *Johnson vs. Root, 2 Fisher's Pat. Cases, 305.*

allowing two years' sale and use prior to application, this question was treated as identical with the question of "public use."

In Pennock *vs.* Dialogue (vol. iv. Washington, p. 544), 1825, the judge said: "If an inventor makes his discovery "public, looks on, and permits others freely to use it, "without objection, or assertion of claim to the invention, "of which the public might take notice, he abandons the "inchoate right to the exclusive use of the invention to "which a patent would have entitled him, had it been "applied for before such use; and we think it makes no "difference in the principle that the article so publicly "used, and afterward patented, was made by a particular "individual who did so by the private permission of the "inventor." "It is possible that the inventor may not "have intended to give the benefit of his discovery to the "public. But it is not a question of intention which is "involved in the principle which we have laid down, but "of legal inference, resulting from the conduct of the "inventor, and affecting the interests of the public."

The decision in Shaw *vs.* Cooper (vol. vii. Peters, p. 320) is to the same effect.

In Pitts *vs.* Hall (vol. i. Fisher's Patent Reports, p. 441), 1851, Judge Nelson said (p. 449): "An abandonment, or "dedication, may occur within the two years (allowed by "the act of March 3, 1839), and at any time down to the "procurement of the patent. The mere use or sale, how-"ever, of the machine, within the two years, will not alone "or of itself work an abandonment. . . The use or "sale must be accompanied by some declarations or acts "going to establish an intention on the part of the patentee "to give to the public the benefit of his improvement."

In a later case, the patentee invented his improvement in

1849, and continued to experiment and perfect his invention until 1852, but did not apply for his patent till 1855; but he was all the time in the employ of one who held a prior and controlling patent, which prevented the use of his improvement, and he delayed his application on this account. The court held that this did not constitute abandonment, notwithstanding a patent for the same thing was granted to other parties in Belgium, June 16, 1853.[1]

In the case of Jordan *vs.* Dobson (vol. iv. Fisher's Patent Cases, p. 232), 1870, it was held that the lapse of twenty-two years between the expiration of the original patent and the application for its extension by Congress, did not constitute abandonment; but the facts to explain this do not appear in the case.

In the case of the American Hide and Leather Splitting and Dressing Machine Company *vs.* the American Tool and Machine Company (vol. iv. Fisher's Patent Cases, p. 284), 1870, it was held that an inventor might so freely allow the use of his invention within the two years immediately preceding his application, as to have his acts amount to an abandonment of the invention.

Where an inventor was the first to conceive the invention, and used due diligence afterward in reducing the same to practice, he has a title to a patent therefor which can be disturbed by no other inventor, *if such title is duly asserted;* but, as against the claims of a rival inventor, there is no reason, on principle, why the prior inventor should not be held to the same diligence in making his application for a patent as in reducing the invention to practice. The prior inventor would not be allowed to unreasonably delay his application for a patent and still hold good his claim against a more diligent subsequent inventor.

1 *White vs. Allen, 2 Fisher's Pat. Cases, 440: 1863.*

Abandonment after Application, and before Grant of Patent, may take place; but here the evidence would need to be so strong as to be conclusive, for the filing of the application is the assertion of a claim to a patent in the strongest possible manner.

In one case, the inventor made an application in 1836, rejected in 1837; he renewed in 1837, and got a second rejection; he applied a third time and failed; he continued further efforts in 1839; afterward amended and finally obtained his patent, on appeal, in 1843. This state of facts was held not to constitute an abandonment.[1]

In another case, the original application was filed in 1850, but was finally rejected by the Commissioner of Patents. An appeal was taken to the Circuit Court, and not decided till 1856, and then the decision of the Commissioner was affirmed. A new Commissioner, coming into office, granted a patent February 24, 1857. Held, that this delay did not constitute abandonment, and that an applicant can not be prejudiced by the laches of the Government officers.[2]

In the case of Sayles *vs.* the Chicago and North-western Railway Company (vol. ii. Fisher's Patent Cases, p. 523), 1865, a similar delay of five years occurred, but was held not to constitute abandonment.

Excerpt from a later case: "The next objection to be "noticed, is, that the inventor abandoned his invention be- "cause his application for a patent, which was made April "12, 1855, was rejected February 6, 1856, and because he "did not appeal at all or make any new application until "March 25, 1864, . . it is not possible to hold that any "use of the invention, without the consent of the inventor,

1 *Adams vs. Edwards, 1 Fisher's Pat. Cases, 1: 1848.*
2 *Adams vs. Jones, 1 Fisher's Pat. Cases, 527.*

"while his application for a patent was pending in the "Patent Office, can defeat the operation of the letters-"patent after they are duly granted."[1]

Abandonment after Patent Granted. "Aban-"donment, or dedication to the public, may be made as "well after patent granted as before; but, where the patent "has actually been granted, it would undoubtedly require "a strong case to prove abandonment."[2] Nothing less than deliberate and undisputed dedication to the public, in set terms, would probably operate as an abandonment after patent granted.

The Evidence of Abandonment must, in any case, be very clear and cogent. Abandonment, or dedication, is in the nature of a forfeiture of a right which the law does not favor, and should be made out beyond all reasonable doubt. It must be proved, never presumed.[3] Mere lapse of time proves nothing.[4]

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1 *Dental Vulcanized Rubber Co. vs. Wetherbee, 3 Fisher's Pat. Cases, 97: 1866.*

2 *Bell vs. Daniels, 1 Fisher's Pat. Cases, 378: 1858.*

3 *Pitts vs. Hall, 2 Blatchford, 238. McCormick vs. Seymour, 2 Blatchford, 256. American Hide & Leather Dressing & Splitting Machine Co. vs. American Tool & Machine Co., 4 Fisher's Pat. Cases, 284.*

4 *Russell & Erwin Mfg. Co. vs. Mallory, 2 Official Gazette, 495.*

CHAPTER X.

CAN A PRINCIPLE BE PATENTED?

THIS is a question not infrequently asked. In commencing the discussion of this question, the most distinguished of American writers upon patent law[1] speaks of it as "that very difficult question." He makes it unusually difficult, because he attempts to answer the question which forms the title of this chapter in the affirmative, when the Supreme Court has, twice at least, answered it in the negative, and this in one instance when one of the most important of all inventions of all ages was under consideration, — that of the electric telegraph.

A principle, in the sense of the patent law, is an elementary physical truth or law; and some confusion results in discussing the question whether a principle is patentable, unless there is kept in mind just what question we desire answered. A principle is certainly patentable in one sense, — that is, when a man has invented a new machine, and properly patented it, he is entitled to treat as infringements all other machines operating on the same principle. The customary and proper way of ascertaining whether two machines operate on the same principle is, to inquire if they make use of the same mechanical parts or equivalents therefor, to accomplish similar effects; and by equivalents are meant such substitutes for other mechanical parts as are within the knowledge of a person skilled in the matters to which the invention pertains, for producing results similar

1 *George Ticknor Curtis.*

to the results produced by such other mechanical parts. In this sense, a principle is patentable; but the question at the head of this chapter has usually quite another meaning. It usually means, Can all ways of producing a certain result be covered and claimed in a single patent? or, Can all ways of producing a certain result, by means of a certain agency, be covered and claimed in a single patent? To the question as put in this shape, a negative answer is given by the Supreme Court, our highest authority. Let us look at a few of the cases: —

A patentee claimed, as an improvement in looms, "the "connection of the reed with the yarn-beam, and the com- "munication of the motion from the one to the other, "*which may be done as above specified.*" In a suit brought on this patent, the defendants contended that this was a claim to an abstract principle. Judge Story held that it was a claim to the specific mechanism shown in the patent, and said: "We hold this opinion the more readily, because "we are of opinion that, if it be construed to include all "other modes of communication of motion from the reed "to the yarn-beam, and for the connection of the one "to the other generally, it is utterly void, as being an "attempt to maintain a patent for an abstract principle, or "for all possible and probable modes whatsoever of such "communication. . . A man might just as well claim "a title to all possible modes of communicating motion "from a steam-engine to a steam-boat, although he had "invented but one mode; or, indeed, of communicating "motion from any one thing to all or any other things, "simply because he had invented one mode of communi- "cating motion from one machine to another in a particular "case."[1]

1 *Stone vs. Sprague, 1 Story, 271: June, 1840.*

In a later case, tried by the same judge in the same year, the following excerpt from the decision gives both the law and the facts: "Now what is the language in which the "patentee has summed up his claim and invention? The "specification states: 'It is claimed as new, to cut ice of "a uniform size, by means of an apparatus worked by any "other power than human. The invention of this art, as "well as the particular method of the application of the "principle, are claimed by the subscriber' (Wyeth). It "is plain, then, that here the patentee claims an exclusive "title to the art of cutting ice by means of any power, "other than human power. Such a claim is utterly un- "maintainable in point of law. It is a claim for an art or "principle in the abstract, and not for any particular "method or machinery by which ice is to be cut. No "man can have a right to cut ice by all means or methods, "or by all or any sort of apparatus, although he is not the "inventor of any or all of such means, methods, or ap- "paratus."[1]

This question came, in some sort, before the Supreme Court, in an action upon a patent for an alleged invention of a machine for making lead pipe. The patentee claimed as his invention, "the combination of . . the core and "bridge, or guide-piece, with the cylinder, the piston, the "chamber, and the die, when used to form pipes of metal, "under heat and pressure, in the manner set forth, *or in any* "*other manner* substantially the same." The Supreme Court took occasion to say that a claim for all ways of doing a thing is not sustainable, and that no one could maintain an exclusive right to a new power, should one be discovered, as steam, electricity, or any other power of nature.[2] In

1 *Wyeth vs. Stone, 1 Story, 285: October, 1840.*
2 *Le Roy vs. Tatham, 14 Howard, 175: 1852.*

this case, the machinery was old, and, as the claim was on the machinery, the patent was voided, on the ground of lack of novelty. The *process* used was, however, new and very useful, and, in a subsequent proceeding, this patent again came before the Supreme Court, and was sustained *as a process.*[1]

In 1853, the early patent of Morse, for his electric telegraph, came before the Supreme Court. One claim in the patent reads: "I do not propose to limit myself to the "specific machinery, or parts of machinery, described in "the foregoing specification and claims; the essence of "my invention being the use of the motive power of the "electric or galvanic current, which I call electro-magnet-"ism, however developed, for marking or printing intelli-"gible characters or signs at any distances, being a new "application of that power, of which I claim to be the "first inventor or discoverer."[2] It is hardly possible that a case could arise presenting a fairer chance or greater inducements than this one for the indorsement of such a claim. The court fully and squarely found that Morse was the first inventor of the art of conveying intelligence through an electric conductor, as to all the world; the court fully realized the vast importance of the invention; and the specification and claims were drawn with care and skill: these were arguments which would appeal to any properly constituted mind with great force. Yet the court flatly and squarely condemned the claim. Said the learned Chief-Justice: "It is impossible to misunderstand the "extent of this claim. He claims the exclusive right to "every improvement where the *motive power* is the electric "or galvanic current, and the *result* is the marking or

1 *Le Roy vs. Tatham, 22 Howard, 132: 1859.*
2 *O'Rielly vs. Morse, 15 Howard, 120: 1853.*

"printing intelligible characters, signs, or letters, at a "distance. If this claim is maintained, it matters not "by what process or machinery the result is accomplished. "For aught that we now know, some future inventor, in "the onward march of science, may discover a mode of "writing or printing at a distance, by means of the electric "or galvanic current, without using any part of the process "or combination set forth in the plaintiff's specification. "His invention may be less complicated, less liable to get "out of order, less expensive in construction and in its "operation; but yet, if it is covered by this patent, the "inventor could not use it, nor the public have the benefit "of it, without the permission of this patentee. Nor is "this all: while he shuts the door against inventions of "other persons, the patentee would be able to avail him-"self of new discoveries in the properties and power of "electro-magnetism which scientific men might bring to "light. For he says he does not confine his claim to the "machinery or parts of machinery, which he specifies, but "claims for himself a monopoly in its use, however devel-"oped, for the purpose of printing at a distance. New "discoveries in physical science may enable him to com-"bine it with new agents and new elements, and by that "means attain the object in a manner superior to the "present process and altogether different from it. . . "The court is of opinion that the claim is too broad, and "not warranted by law."

In this connection, attention is called to the rule laid down by the Supreme Court, as to the breadth to be given to a claim. In one of McCormick's reaper cases, the court said: "If he be the original inventor of the device or ma-"chine called the divider, he will have the right to treat as "infringers all who make dividers operating on the same

"principle, and performing the same functions by analo-
"gous means or equivalent combinations, even though the
"infringing machine may be an improvement of the
"original, and patentable as such. But if the invention
"claimed be itself but an improvement on a known ma-
"chine, by a mere change of form or combination of
"parts, the patentee can not treat another as an infringer
"who has improved the original machine by use of a
"different form or combination performing the same func-
"tions."[1]

From which it may be concluded, —

FIRST, — That a claim, in terms, to all ways of effecting a certain result, or a claim to all ways of effecting a certain result by means of a certain agency, is void.

SECOND, — That when one makes an invention in a new field, or an invention that is wholly and substantively new and not a mere improvement on some prior thing, the court will give the broadest possible scope to the term "equivalent," and will generally, if not always, construe as an infringement any other thing which makes use of the vital and essential characteristics of the invention, even though the mechanical parts or other tangible agencies may appear to be widely different; but, when an invention is only an improvement on some prior thing, then only plain, palpable, and obvious substitutes will be held to be equivalents.

THIRD, — That where an invention is susceptible of being claimed as a *process*, that is generally, if not always, the strongest and most comprehensive form of claim, as, by its nature, it approaches nearest to a claim for an abstract principle; and claims for processes can generally be so drawn as to practically and legally cover abstract principles.

1 *McCormick vs. Talcott, 20 Howard, 402.*

CHAPTER XI.

THE TITLE: ASSIGNMENTS, GRANTS, LICENSES, AND MORTGAGES.

THE statute enacts, "That every patent, or any interest therein, shall be assignable, in law, by an "instrument in writing; and the patentee, or his assigns or "legal representatives, may, in like manner, grant and "convey an exclusive right, under his patent, to the whole "or any specified part of the United States; and said "assignment, grant, or conveyance shall be void as against "any subsequent purchaser or mortgagee for a valuable "consideration, without notice, unless it is recorded in the "Patent Office within three months from the date thereof."[1]

There are three instruments, conveying interests in patents, specified in the above-quoted section, — assignments, grants, and mortgages; there is a fourth instrument, conveying an interest in a patent, not specified in the statute, but born of the common law, — a license. This chapter will be devoted to the discussion and explanation of these instruments and the interests acquired by them.

An Assignment is an instrument, in writing, conveying either the whole interest in a patent or an undivided part thereof. It must convey to the assignee *all* the rights, as to the portion of the patent assigned, which was before vested in the original patentee. These rights are, the right to make, the right to use, the right to vend to others to use,

1 *Section 36, Act of July 8, 1870.*

and the right to convey any and all of the first three rights mentioned, by assignment, grant, and license, to other parties. Any instrument which does not convey all these rights, and put the assignee into the shoes of the patentee in all these particulars, as to the portion of patent conveyed, is a mere license. An assignor must place an "assignee upon equal footing with himself for the part "assigned. The assignment must undoubtedly convey ". . the entire and unqualified monopoly which the "patentee held in the territory specified, excluding the "patentee himself as well as others. An assignment short "of this is a mere license."[1] From this, it follows that if a patentee convey to another the exclusive right to make, vend, and use under a patent, and yet does not give such other person the right to convey any and all of these rights to others, freely and unqualifiedly, then the conveyance is a mere license.

A Grant is an instrument, in writing, conveying the whole monopoly and rights, as to a patent, originally vested in the patentee, throughout a specified portion of the United States. A grant is a territorial assignment, and a grant must convey the same rights as an assignment, as to the territory specified; otherwise the conveyance is only a license. Assignments and grants are generally spoken of indiscriminately as assignments; but the law recognizes a technical difference. "The terms assignee "and grantee are not used in the patent law as synonym-"ous terms, though courts, without having their attention "particularly called to the subject, have sometimes used "them indiscriminately and in their popular sense."[2] The

1 *Gayler vs. Wilder, 10 Howard, 477.*
2 *Potter vs. Holland, 1 Fisher's Pat. Cases, 327.*

distinction between an assignee and a grantee is this: "An "assignee is one who has transferred to him, in writing, "the whole interest of the original patent, or an undivided "part of such whole interest, in every portion of the United "States. And no one, unless he has such an interest trans- "ferred to him, is an assignee. A grantee is one who has "transferred to him, in writing, the *exclusive* right, under "the patent, to make and use, and to grant to others "to make and use, the thing patented, within and through- "out some specified part or portion of the United States."[1]

No particular form of words is necessary to constitute either an assignment or a grant; if the meaning is clear, that the maker intended to convey either of the interests which have been defined as constituting an assignment or a grant, the courts will construe the writing accordingly. Although the law specifies an instrument in writing, an instrument which is partly written and partly printed, or wholly printed with a written signature, will suffice. An assignment, grant, or license does not need sealing, witnessing, or acknowledging, to make it valid; but witnesses to such a paper are always advisable. A party must be the sole owner of the whole patent, or a grantee under the patent, to be able to bring a suit in his own name for infringement. A mere licensee can not bring such suit. A grantee can only bring such suit for infringement in the district owned by him.

Assignment by Insolvent. Almost or quite all the States have insolvent laws; and, as persons owning patents sometimes come under the operation of such laws, it becomes important to know whether an assignment of the patent of an insolvent person, signed by his assignee or

1 *Potter vs. Holland, 1 Fisher's Pat. Cases, 327.*

trustee or by the court, will pass the legal title. In Massachusetts, the insolvent law authorized the judge, "by an "instrument under his hand, to assign and convey to the "assignee all the estate, real and personal, of the debtor;" and it also provided that such "assignment shall vest in "the assignee all the property, real and personal, which he "could lawfully have sold, assigned, or conveyed, or which "might have been taken in execution upon a judgment "against him." Judge Shepley held that an assignment of an insolvent debtor's patent by the assignee in insolvency, under such law, does not pass the legal title to the patent, but that the debtor must be made by the court to make an assignment in person.[1] There would seem to be no good reason why the same course would not be necessary with a bankrupt patent-owner under a general United States bankrupt law, unless the law itself specifically provided otherwise.

An assignment, and probably a grant, can be made as well before the issue of the patent as after, and, if the conveyance contains a request to that effect, the patent will issue in the name of the assignee. A contract to assign future inventions in a given field is a contract that the courts will enforce.[2]

When an assignment or grant of a patent has been made, it extends to the end of the original term of the patent, and includes all reissues of the patent during that term.[3] But an assignment of a patent will not include a right to an extension of the same beyond the original term, without the presence of the clearest wording to that effect.[4] To assign the patent for the "term for which the said letters-

1 *Ashcroft vs. Walworth*, 5 *Fisher's Pat. Cases*, 528.
2 *Nesmith vs. Calvert*, 1 *Wood. & Min.*, 41.
3 *Wyeth vs. Stone*, 1 *Story*, 273. *Brooks vs. Bicknell*, 4 *McLean*, 64.
4 *Brooks vs. Bicknell*, 4 *McLean*, 64.

patent are or may be granted," is sufficient.[1] A patent can not be attached or sold on execution for a debt of the owner.[2] A patent is an incorporeal right, existing as a whole in no particular state or district, but is co-extensive with the United States. The only way to make a patent available for the payment of a debt is, to proceed against the owner under a state insolvent law or under a United States bankrupt law. If proceeded against as an insolvent, the owner of the patent must be made, by the court, to execute an assignment in person, and the same course must, on principle, be pursued when the proceedings are under the general bankrupt law, unless the law itself specifically provides otherwise. The fact that a machine is patented, does not prevent its being levied upon and sold under state laws; but such a levy and sale only passes a right to the *materials* of which the machine is composed: it gives no right to work the machine.[3]

Recording. The statute *directs* that an assignment or grant shall be recorded within three months from its date. This clause is merely directory. An assignment or grant is good and valid, as against the assignor or grantor and all other persons whatever, except a subsequent *bona-fide* purchaser or mortgagee for a valuable consideration, not having notice or knowledge of the prior assignment or grant, even if never recorded; though it would not, probably, be held valid, if unrecorded, against a creditor proceeding against the assignor or grantor by means of the insolvent or bankrupt laws. If a patentee were to assign his patent to a person who did not, within three months,

1 *Thayer vs. Wales, 5 Fisher's Pat. Cases, 448. Nicholson Pavement Co. vs. Jenkins, 5 Fisher's Pat. Cases, 491.*

2 *Stephens vs. Gladding, 17 Howard, 451.*

3 *Sawin vs. Guild, 1 Gall., 487. Stephens vs. Cady, 14 Howard, 530.*

put the same upon the Patent Office records, and then the patentee should sell the patent to a second purchaser who knew nothing of the prior assignment, and the second purchaser should have his assignment properly recorded, he would take a legal title, and the first purchaser would have no interest in the patent; but, if the second purchaser knew, at the time he took his assignment, of the prior assignment, then the second purchaser would get no title.[1]

Undivided Interests in Patents. It is very important for patentees to know the relations that exist at law between joint owners of patents. Assignments of undivided interests are very common, but their effect is but little understood. Joint owners of undivided interests in a patent are not partners, in any sense, merely from the fact of their joint ownership of the patent. Either owner can sell the whole of his share without the consent of the other, or he can work the patent without any liability to contribute any part of his profits to another owner; and it would seem, on principle, that either of the joint owners can grant all the licenses he pleases and keep all the money he gets therefor. Neither of the joint owners of a patent, nor any number of them short of all the owners, can grant or give any *exclusive* right of any kind.

The relative rights of joint owners of a patent are those of tenants in common: one joint owner has as good right to use and license others to use the thing patented as another joint owner. Neither has a superior right over the other, and one such owner can not prevent another from using the patented thing or licensing others to use it.[2]

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1 *Holden vs. Curtis, 2 N.H., 63. Brooks vs. Byam, 2 Story, 542. Pitts vs. Whitman, 2 Story, 615. Boyd vs. McAlpine, 3 McLean, 429. Case vs. Redfield, 4 McLean, 527. Gibson vs. Cook, 2 Blatchford, 148.*

2 *Chum vs. Brewer, 2 Curtis, 524.*

In commenting on this question, a learned judge said: "None of the parties interested has any right to control "the action of the other parties or to exercise any super- "vision over them. It is difficult to see how an equitable "right of contribution can exist among any of them, "unless it includes all the parties interested and extends "through the whole term of the patent-right. And if "there be a claim for contribution of profits, there should "also be a correlative claim for losses, and an obligation "upon each party to use due diligence in making his "interest profitable. It is not and can not be contended "that these parties are copartners; but the idea of mutual "contribution for profits and losses would require even "more than copartnership."[1]

Warranty. If an assignment or grant contains no warranty of title, or as to the validity of the patent, but only a simple transfer of the assignor's or grantor's title, the assignee takes the interest, pretended to be conveyed, at his own risk as to the title of the assignor or grantor and as to the validity of the patent. The paper is in the nature of a quit-claim; and, if the title fail, or the patent prove invalid, the assignee or grantee can not recover back any money paid for the assignment or grant.[2]

Licenses. A license is a conveyance of an interest in a patent, less than an assignment or grant. It need not, necessarily, be in writing,[3] though otherwise it might be very hard to prove; and it does not need to be recorded.[4] It is not a creature of the statute, but of the common law.

1 *Vose vs. Singer, 4 Allen, 226: Mass., 1862.*
2 *Jolliffe vs. Collins, 21 Missouri, 341. McClure vs. Jeffrey, 8 Indiana, 83.*
3 *Potter vs. Holland, 1 Fisher's Pat. Cases, 327.*
4 *Chambers vs. Smith, 5 Fisher's Pat. Cases, 12.*

A license is usually a permit to make, or use, or sell the thing patented, or to do two or more of these three things; and it may be an exclusive right to do all these things throughout the whole United States, and yet not amount to an assignment, unless it convey the right to convey all of these rights to others. A conveyance, to amount to an assignment or grant, must put the person to whom a right is thereby conveyed into the very standing and shoes of the patentee, as to the portion of the patent conveyed. Anything that conveys a less right is a license. No particular form of words is necessary to constitute a license; the expressed intent of the maker of the conveyance will suffice, no matter what words he uses, though it is customary and proper to use the word "license," in distinction from "assign" or "grant," as the operating word in a license. A licensee can not bring a suit for infringement in his own name, while the grantee of a particular district or the assignee of the whole patent can.

By means of licenses, a patent-owner may erect many distinct and separable interests under a patent. He may give one person the exclusive right to *make* the patented article in a certain district or through the whole United States; he may give to another the exclusive right to *use*, and to still another the exclusive right to *sell;* or he may give to different persons a common right to *make*, or to *use*, or to *sell*, one or all, in a certain territory or through the whole United States.

A license to a party which does not, in terms, or by equivalent words, showing that it was meant to be assignable, give the right to the licensee to assign the same, is a mere personal privilege and not transferable by the act of the licensee.[1] A license which is not expressed to be

1 *Troy Iron & Nail Factory vs. Corning, 14 Howard, 216.*

for the whole term of the patent, is revocable by the maker, and, being so revoked, the right of the licensee comes to an end; but if the license is expressed to be for the whole term of the patent, then it is not revocable, and, if a shop-license is paid for, in advance, by a gross sum of money, then the license would not be revocable, unless expressly stated to be.

Licenses may be granted with conditions of forfeiture attached, such as the payment of a royalty or the use of due diligence in carrying on business under the patent; and, if such condition is broken by the licensee, he forfeits his right to the license, and he may be proceeded against like any other infringer.[1]

A licensee is not estopped, by his action in taking a license, from denying the validity of the patent or setting up any defense that any other person might make.[2]

If an inventor, before procuring a patent, allows another person to make the article afterward patented, or acquiesce in such making or in a use of the invention, this the law construes as a license, from the inventor to such other person, to use the patented thing after the grant of the patent.[3]

Mortgage of Patents. Although the statute does not expressly state that patents may be legally mortgaged, it is clear, from the reference, in the section quoted at the beginning of this chapter, to "a mortgagee for a valuable consideration," that a mortgage, properly made and recorded at the Patent Office, would be held valid by the courts. As no specific formula is necessary to constitute

1 *Woodworth vs. Cook, 2 Blatchford, 160. Bell vs. McCullough, 1 Fisher's Pat. Cases, 380.*

2 *Burr vs. Duryee, 2 Fisher's Pat. Cases, 275.*

3 *McClurg vs. Kingsland, 1 Howard, 208.*

an assignment, or grant, or license, the same is, on principle, true as to a mortgage, and any instrument clearly expressing the idea that the maker intended to give a mortgage on his patent, would probably be held sufficient. It is probable that, if any form, which is legal and proper under the practice in any of the states, were followed, that would answer the requirements of the law. As an assignment does not need to be sealed, witnessed, or acknowledged, it would seem that a mortgage, which conveys a less interest, would not need these formalities; yet, in the absence of any statutory directions or adjudications upon this point, it might be advisable, and certainly not harmful, to follow the formalities prescribed for mortgages by the laws of the state where the patent mortgage is executed, and, in case an acknowledgment is taken, to have it taken by the clerk of a court of record having a seal. The mortgage would need to be recorded at the Patent Office.

CHAPTER XII.

JOINDER OF INVENTIONS, AND OF INVENTORS.

JOINDER OF INVENTIONS. It is important to know how many and what different inventions may be properly covered and claimed in a single patent.

This question came up for discussion and decision, before Judge Story, in 1840. The patent under discussion covered two distinct machines, — one for marking ice into blocks of suitable size for cutting, and the other a machine for cutting the ice. The point was made by the defendants, that two machines could not be covered and claimed in one patent. With reference to this, the judge said: "I "agree that, under the general patent acts, if two machines "are patented, which are wholly independent of each "other, and distinct inventions, for unconnected objects, "then the objection will lie in its full force, and be fatal. "The same rule would apply to a patent for several distinct "improvements upon different machines, having no common "object or connected operation. . . Construing, then, "the present to be a patent for each machine, but for the "same common purpose, and auxiliary to the same common "end, I do not perceive any just foundation for the objec-"tion made to it."[1]

In the case of Emerson *vs.* Hogg, tried in 1845, this question came up again. The plaintiff claimed, in his patent, three distinct and separable machines for use in

1 *Wyeth vs. Stone, 1 Story, 273.*

propelling "either vessels in the water or carriages on the land." He claimed (1) "substituting for the crank in the "reciprocating engine a grooved cylinder, operating in "the manner described, by means of its connection with "the piston-rod," (2) a certain "spiral propelling wheel," and (3) "the application of the revolving vertical shaft to "the turning of a capstan on the deck of a vessel." The machine first claimed was not confined, in its use, to a boat or sailing-vessel; it could be made use of in any steam-engine. It was objected, that these distinct inventions could not be covered in the same patent. The judge said, after reviewing former cases, on this point: "The principle "seems to be, that the inventions should be capable of "being used in connection, and to subserve a common "end, though their actual employment together does not "seem to be required to sustain the validity of the patent "in which they may be united. Accordingly, the wrong-"ful use of either separate machine is a violation of the "patent-right *pro tanto*. We think the specification in "this case shows that these three separate machines were "contrived with the view of being used conjointly, and as "conducing to a common end, in the better propelling "and navigating a ship; and, in our opinion, their capa-"bility of being used separately and independent of each "other, does not prevent their being embraced in one "patent."[1]

This patent came before the Supreme Court, in 1859, and, with reference to the objection made, "that one set "of letters-patent for more than one invention is not tol-"erated in law," the court said: "But grant that such is "the result when two or more inventions are entirely "separate and independent, though this is doubtful on

1 *Emerson vs. Hogg, 2 Blatchford, 1.*

"principle, yet it is well settled, in the cases formerly cited, "that a patent for more than one invention is not void, if "they are connected in their design and operation. This "last is clearly the case here. They all, here, relate to "the propelling of carriages and vessels by steam, and "only differ, as they must on water, from what they are on "land; a paddle-wheel being necessary in the former, and "not in the latter, and one being used in the former, "which is likewise claimed to be an improved one. All "are a part of one combination when used in the water, "and differing only as the parts must when used to propel "in a different element."[1]

It is clear, that any number of separable inventions, capable of co-operating toward a common end, as well as several improvements of different parts of a machine, manufacture, or composition of matter, are claimable in one and the same patent; and it is equally clear, on principle, that a process, a machine, and a product, concurring to a common result, are properly claimable in the same patent.

The Patent Office, however, for the sake of convenience in examining inventions by classes, at the time of this writing, refuses to grant such patents. It requires that a separate patent shall be taken for each distinct machine, process, manufacture, or composition of matter, even for distinct improvements upon the same structure or machine. The Office refuses to permit a pulley at the top of a window-curtain and a cord-strainer connected to the pulley by a cord, to be covered in the same patent. It would seem, from the cases quoted, that a United States court would hardly sustain the action of the Office.

1 *Hogg vs. Emerson, 11 Howard, 587.*

Joinder of Inventors. Whenever an invention is the joint product of different minds, a joint patent must be applied for by all the inventors, and if a patent for such an invention is taken by any number of such inventors less than the whole number, such patent is void. The invention is essentially a product of mind and not of the hands, and he who suggests an essential feature or features of an art, machine, manufacture, or compound, is the inventor thereof, although another person may embody such suggestions in tangible materials.

It is often difficult to determine whether an invention is joint or single; but, when two or more persons are engaged together in the making of an invention, and an invention results as the effect of their joint consultations, such invention is joint, and the courts will not go into all the minutiæ of the case, although, and of course, one or the other of the persons must have been the first to specify this or that part, or the whole of the invention, in words, or by drawings, or by a model, or by actual reduction to practice. When, however, one person is clearly the inventor of a distinct part of a device, and another person is clearly the inventor of another distinct part of such device, distinct patents may he taken by each for his part, though a joint patent would, probably, be valid.

When a patent has been granted for an invention alleged to be joint, no evidence short of that which is conclusive and indisputable, will be held to prove such invention to be other than joint.[1]

Scientific and Skilled Aid to Inventors. We may as well inquire, at this point, to what extent a person, who has conceived the main principle or characteristic of

1 *Stearns vs. Barrett, 1 Mason, 152. Barett vs. Hall, 1 Mason, 472. Thomas vs. Weeks, 2 Paine, 103.*

an invention, is entitled to employ the services of scientific men and skilled workmen in putting his ideas into practice, without violating his right to a patent for the resultant product.

Upon this point, Chief-Justice Taney, speaking for the Supreme Court, said, in a case where Morse's telegraph patent was under consideration: "Neither can the inquiries "he made, or the information or advice he received from "men of science, in the course of his researches, impair "his right to the character of an inventor. No invention "can possibly be made, consisting of a combination of "different elements of power, without a thorough knowl- "edge of the properties of each of them, and of the mode "in which they operate on each other; and it can make no "difference in this respect, whether he derives his informa- "tion from books or from conversation with men skilled in "the science. If it were otherwise, no patent in which a "combination of different elements is used, could be ob- "tained; for no man ever made such an invention without "having first obtained this information, unless it was dis- "covered by some fortunate accident. And it is evident, "that such an invention as the electro-magnetic telegraph "could never have been brought into action without it; "for a very high degree of scientific knowledge and the "nicest skill in the mechanic arts are combined in it, and "were both necessary to bring it into successful operation. "And the fact that Morse sought and obtained the neces- "sary information and counsel from the best sources, and "acted upon it, neither impairs his rights as an inventor, "nor detracts from his merits."[1]

The following excerpt from the decision of Judge Betts, in another case, gives the facts and the law applied to them:

1 *O'Reilly vs. Morse, 15 Howard, 62, p. 111.*

"It is contended that Berry was the inventor, and not the "plaintiffs; which position, if established, would be a good "ground to dissolve the injunction. The defendants lay "before the court the declarations of Berry, in connection "with his working without any draft, design, or model "before him, which, the defendants insist, proves him to "be the inventor. But, on the other hand, Mr. Kelsey "details very minutely the suggestions he made, his super- "intendence, his suggesting alterations in a design got up, "his disapproving that, and the adoption of his views in "the design now patented. And Mr. Berry gives his own "account of the matter, and explains the declarations "attributed to him, as referring to his working without "a copy before him, and to the design being an original "and not a copy. He does not intimate that he did not "receive suggestions, alterations, and directions from Mr. "Kelsey, which were carried out in this design. To con- "stitute an inventor, it is not necessary he should have the "manual skill and dexterity to make the drafts. If the "ideas are furnished by him, for producing the result "aimed at, he is entitled to avail himself of the mechan- "ical skill of others, to carry out practically his contriv- "ance. Here the devising of the pattern, in this sense, "appears to have been by the plaintiffs."[1]

From these and other cases, it appears that, when a person has in his mind the main features of an invention, or has grasped the general principles upon which it is to operate, he is entitled to the aid, counsels, and experiments of scientific men, and to the efforts and suggestions of skilled mechanics, in reducing his invention to practice, and in embodying it in tangible materials, without forfeiting his right to the title of inventor. In one, and

1 *Sparkman vs. Higgins, 1 Blatchford, 205: 1846.*

that a leading case, it was held, that, to invalidate a patent, suggestions made to the patentee by others must furnish *all* the information necessary to construct the improvement, and that, if such suggestions fall short of suggesting a complete machine or other invention, they are only suggestions and not invention.[1]

Employer and Employee. An employer is not necessarily entitled to an invention made by a workman in his employ. It would require a distinct contract or understanding to that effect, to entitle the employer to the patent. A simple contract for the labor of a man at any ordinary trade, profession, or occupation, does not include a right to the inventions made by the employee, whether relating to the business at which the person is employed or not; but if a man is employed for the purpose, wholly or partially, of making improvements in any branch of trade or manufacture, then his inventions would belong to the employer. Where, in the absence of any specific understanding or contract, a man makes an invention in the time of his employer, using his tools and materials in experiments and construction, this would furnish strong evidence that the improvement was intended to be for the benefit of the employer. In any case, the application for patent must be made by the inventor, and, if it belongs to the employer, assigned to him. If an employee, after making an invention which would equitably belong to the employer, were to refuse to apply for a patent and to assign the same, the employer's remedy would lie in an application to a court of equity, to compel the inventor to take these steps.

1 *Pitts vs. Hall, 2 Blatchford, 236: 1851. Treadwell vs. Parrott, 3 Fisher's Pat. Cases, 124.*

CHAPTER XIII.

CAVEATS.

THE statute enacts, "That any citizen of the United "States, who shall make any new invention or dis- "covery, and shall desire further time to mature the same, "may, on payment of the duty required by law, file in the "Patent Office a caveat, setting forth the design thereof, "and of its distinguishing characteristics, and praying pro- "tection of his right until he shall have matured his inven- "tion; and such caveat shall be filed in the confidential "archives of the Office and preserved in secrecy, and shall "be operative for the term of one year from the filing "thereof; and, if application shall be made within the "year, by any other person, for a patent with which such "caveat would in any manner interfere, the Commissioner "shall deposit the description, specification, drawings, and "model of such application in like manner in the confi- "dential archives of the Office, and give notice thereof, "by mail, to the person filing the caveat, who, if he would "avail himself of his caveat, shall file his description, "specifications, drawings, and model within three months "from the time of placing said notice in the post-office in "Washington, with the usual time required for transmitting "it to the caveator added thereto, which time shall be "indorsed on the notice. And an alien shall have the "privilege herein granted, if he shall have resided in the "United States one year next preceding the filing of his "caveat, and made oath of his intention to become a

"citizen." The statutory governmental fee upon the filing of a caveat is ten dollars.

The United States grants patents to citizens of all countries upon the same terms; but caveats can only be filed by citizens and aliens who have resided here one year and taken the oath of intention to become citizens.

A caveat is only notice of an inventor's intention to ultimately apply for a patent, and it prevents another inventor from getting a patent unbeknown to the caveator while the caveat is in force. It is the practice of the Patent Office to revive a caveat from year to year, so long as the government fee is regularly paid for each year, and the Office has renewed caveats upon the payment of the fee after the caveat had once lapsed or expired. So long as the caveat is in force, no one but the inventor or his attorney can have any access to it, or get any information from the Office about it; but, after a caveat has lapsed, any one is entitled to see it or have a copy of it, upon paying for the same. A caveat does not prevent other parties than the inventor from making, using, and selling the invention. Any invention can always be freely made, used, and sold by others than the inventor, without liability, until the inventor's patent issues from the Patent Office.

Although the filing of a caveat is a very strong assertion of an intention to procure a patent for an invention, yet an inventor may abandon the invention afterward, or allow it to go into public use for more than two years before application, and thereby lose his right to a patent.

The specification or description for a caveat does not need to be drawn with the same care and skill as the specification for a patent, and it needs to have no "claim."

A caveat can properly cover the same number and kind

of distinct and separable inventions as a patent, and no more; and we have seen that a patent may cover and include as many distinct and separable inventions as are capable of co-operating toward some one result or end. No models or specimens of ingredients need to be filed with a caveat. A caveat does, however, require a petition, specification, or description, and an oath, and, when the nature of the invention permits it, drawings executed in the same manner and upon paper of the same kind and size as for a patent.

A caveat may be legally filed on a complete or an incomplete invention; the filing of a caveat is not conclusive evidence that the invention which forms its subject-matter is incomplete. The invention may be complete or incomplete, and in either case it is equally proper subject-matter for a caveat.[1]

1 *Johnson* ex. *Root*, 1 Fisher's Pat. Cases, 351

CHAPTER XIV.

APPLICATION FOR PATENT.

THE statute enacts, "That, before any inventor or "discoverer shall receive a patent for his invention "or discovery, he shall make application therefor, in "writing, to the Commissioner, and shall file in the Patent "Office a written description of the same, and of the "manner and process of making, constructing, compound- "ing, and using it, in such full, clear, concise, and exact "terms, as to enable any person skilled in the art or "science to which it appertains, or with which it is most "nearly connected, to make, construct, compound, and "use the same; and, in case of a machine, he shall ex- "plain the principle thereof, and the best mode in which "he has contemplated applying that principle, so as to dis- "tinguish it from other inventions; and he shall particu- "larly point out and distinctly claim the part, improvement, "or combination, which he claims as his invention or dis- "covery; and said specification and claim shall be signed "by the inventor and attested by two witnesses."[1]

"SEC. 27. *And be it further enacted*, That, when the "nature of the case admits of drawings, the applicant "shall furnish one copy, signed by the inventor or his "attorney in fact, and attested by two witnesses, which "shall be filed in the Patent Office; and a copy of said "drawings, to be furnished by the Patent Office, shall be "attached to the patent as part of the specification."

1 *Section 26, Act of July 8, 1870.*

"SEC. 28. *And be it further enacted*, That, when the "invention or discovery is of a composition of matter, the "applicant, if required by the Commissioner, shall furnish "specimens of ingredients and of the composition sufficient "in quantity for the purpose of experiment."

"SEC. 29. *And be it further enacted*, That, in all cases "which admit of representation by model, the applicant, "if required by the Commissioner, shall furnish one of "convenient size, to exhibit advantageously the several "parts of his invention or discovery."

"SEC. 30. *And be it further enacted*, That the appli- "cant shall make oath or affirmation that he does verily "believe himself to be the original and first inventor "or discoverer of the art, machine, manufacture, compo- "sition, or improvement, for which he solicits a patent, "that he does not know and does not believe that the "same was ever before known or used; and shall state "of what country he is a citizen."

The Government fee, prescribed by law, is thirty-five dollars, of which fifteen is to be paid when the application is filed, and twenty more when the patent is allowed and the applicant desires it to issue.

The "application in writing" has always been construed to mean a petition.

In order to constitute an application for a patent which the Commissioner will recognize and act upon, there is required a petition, a specification, an oath, drawings and model when the nature of the invention permits it, or, if the invention be a new composition of matter, specimens of the ingredients and of the compound, and a fee of fifteen dollars.

If an inventor dies before the patent is applied for, the same can be applied for by his executor or administrator,

on behalf of and for the benefit of the heirs or devisees of the deceased.[1]

The Petition. No particular form of words is prescribed for a petition, and any form would be held sufficient which respectfully and clearly sets forth the desire of the petitioner for the grant to him of a patent. The Patent Office has, however, issued a pamphlet containing instructions and forms for petitions and other papers, which may be followed with great propriety. This pamphlet the Office will send, without charge, to all intending patentees who request the Commissioner so to do. The proper forms will be found in this pamphlet.

The Drawing. Patent Office drawings are now required to be upon paper stiff enough to stand in the portfolios, the surface of which must be calendered and smooth; "two-sheet" Bristol board, or Whatman's hot-pressed drawing paper, "antiquarian" size, is recommended. The size of the sheet should be exactly 10×15 inches, with a marginal line just one inch from the edge all around. Nothing but the drawings and signature are permitted on the face of the sheet, and these must all be within the marginal line. One of the ends of the sheet is taken as the top, and a space of one and one-fourth inches downward from the marginal line next the top must be left blank for Patent Office purposes. The signatures of the inventor and witnesses are to be put at the bottom of the sheet. As many sheets of drawing can be used as are necessary. The drawings and signatures must all be in perfectly black india-ink,—clear, sharp, solid, and not crowded. It is useless for any but a competent draughts-

1 *Section 34, Act of 1870.*

man to attempt the production of a Patent Office drawing, and he will need the instructions given by the Office pamphlet. Drawings must be rolled, and not folded, for transmission to the Patent Office. The care required by the Office is necessary, in order to make the drawings reproducible by photo-lithography. A lithographic copy is inserted in the patent when issued, and the copies in the Patent Office reports are the same.

The drawings form a part of the specification, and can be referred to, to explain it. The drawing should be referred to in the specification by letters of reference; but, if the drawing can be understood without them, their omission will not render the patent invalid.[1] The drawing need not be to an exact scale.

The Oath. The inventor is required to make oath, not that he is the original discoverer or inventor, but that he believes himself to be such; that he does not know or believe that the same was ever before known or used; and he must state of what country he is a citizen. Joint inventors must make oath that they believe themselves to be the original, first, and joint inventors. An executor must make oath that he believes the deceased to have been the original and first inventor, etc.

The statute directing the taking of the oath is held to be merely directory, so that, if it were irregular in form, or had been omitted altogether, the patent granted upon an application wanting the oath would not be invalid.[2]

The Model is required, by the Office rules, to clearly exhibit every feature which forms the subject of a claim of

1 *Earle vs. Sawyer, 4 Mason, 9. Burrall vs. Jewett, 2 Paige, 143. Brooks vs. Bicknell, 3 McLean, 261. Washburn vs. Gould, 3 Story, 133. Emerson vs. Hogg, 2 Blatchford, 9.*

2 *Whittemore vs. Cutter, 1 Gall., 432. Dyer vs. Rich, 1 Metcalf, 191. Crompton vs. The Belknap Mills, 3 Fisher's Pat. Cases, 536.*

invention, but should not include other matter, unless necessary to the working of the model. It must be neatly and substantially made, of durable material, and not more than one foot in length, width, or height. If made of soft wood, it should be painted, stained, or varnished. The parts should not be glued together. Models are, as a rule, retained by the Office, though, if a case has stood rejected for more than two years, or if the applicant will formally abandon a pending case at any time, the Office will return the model to applicant, upon his request and at his expense.

The Specification is, by far, the most important thing about a patent, and the highest care and skill are often requisite in its preparation. Specifications may, and often do, have faults, which render the patents of which they form a part void and worthless. If, however, the patentee has made an honest effort to clearly describe his invention, and to accurately claim it and nothing more, a court, before which his patent may come for consideration and adjudication, will sustain its validity, if it can be reasonably done.

"It is now a principle, settled by the concurrent opinions "of some of the most enlightened jurists of this country, "that patents securing to inventors the just rewards of their "labor and industry, are to be construed liberally, and "with a fair purpose of carrying out the object of the "constitutional provision on this subject and the legislation "of Congress based upon it. It is now held, that these "exclusive rights are not to be viewed in the light of "odious monopolies, but as the result of a policy at once "beneficent and wise. The Constitution of the United "States (art. i., sec. 8) has conferred on Congress, among

"other delegations of power, the right to pass laws 'to "promote the progress of science and the useful arts, by "securing, for limited times, to authors and inventors, the "exclusive right to their respective writings and discov- "eries.' And Congress, in the exercise of the power thus "granted, has, from time to time, passed laws on this "subject, designed to give practical effect to the constitu- "tional provision. At this day, there are probably few "who doubt the justness and the wisdom of this policy. "That it has been followed with good results, in stimu- "lating our countrymen to intellectual effort, and has "thereby contributed essentially to our rapid national "advance in 'science and the useful arts,' is too clear for "controversy."[1]

The law, however, requires that a specification shall describe the invention which forms its subject-matter, in such "full, clear, concise, and exact terms, as to enable "any person skilled in the art or science to which it apper- "tains, or with which it is most nearly connected, to make, "construct, compound, and use the same; . . and he "shall particularly point out and distinctly claim the part, "improvement, or combination which he claims as his in- "vention or discovery;" and, while the courts are bound construe a patent liberally, they will not permit a patentee to couch his specification in such ambiguous terms that it can not be worked by, or so that its claim may be expanded or contracted to suit different exigencies.[2]

It will be observed, that the requirements of the statute, in this respect, are twofold: First, That the invention shall be fairly and clearly described; and, Second, That it shall be accurately claimed. The object of the first requirement

1 *Parker vs. Stiles, 5 McLean, 44: 1849.*
2 *Parker vs. Sears, 1 Fisher's Pat. Cases, 93.*

is, that the public may be enabled to practice the invention when the patent has expired.[1]

We were at considerable pains to point out, in the first chapter, explaining the nature of a patent privilege, that a patent is in the nature of a bargain between the inventor and the public, and that the public requires, as a consideration for its grant of an exclusive right to the inventor, that he shall fully disclose his invention to the public, so that the public may freely use it when the patentee's exclusive right is at an end. The specification, of which the drawing is a part, is the paper wherein the patentee undertakes to make his disclosure; and, if he does not do so fully and clearly, he does not give the consideration which the public demands, and the public, acting through its courts, declares the bargain (that is, the patent) null and void. This defect is known, in legal phrase, as ambiguity in the description.

The object of the requirement that the patentee shall accurately claim his invention is, "that, while the patent "is in force, others may be informed of the precise claim "of the patentee, and may not ignorantly infringe his "exclusive right."[2] The defect arising from not accurately claiming an invention is known as ambiguity in the claim.

The question as to whether there is ambiguity in a claim is always a question of law, and for the judge to decide; while the question as to whether there is ambiguity in a a description is a question of fact, and may be decided by a jury.

Ambiguity in Description. A description in a specification is ambiguous when a person skilled in the art or

1 *Parker vs. Stiles, 5 McLean, 44.* 2 *Ibid.*

science to which the invention appertains, or with which it is most nearly connected, can not, when working by the specification and drawings, and without invention or experiment of his own, put the invention in practice.[1]

The law does not suppose a specification to be addressed to persons of the very highest skill in the art or business to which the invention relates, but to persons fairly skilled in such art or business. If, for instance, the invention is a machine such as finds its proper use in a machinist's shop, then a fairly skilled machinist is the person to whom the specification is supposed to be addressed; and if such a machinist can not, from the specification and drawings, construct the machine, without invention or experiment of his own, then the specification is ambiguous and uncertain. The specification might be thus faulty, and yet a person of unusual mechanical and scientific attainments, as a thoroughly educated and experienced mechanical engineer, might be able, by his own superior skill and wide range of knowledge, to remedy the defects of the specification, and construct from it the machine intended to be patented, and yet the specification might be ambiguous.

The question as to whether a specification is ambiguous is generally attempted to be settled in patent suits by means of the evidence of experts, who are persons of more than ordinary skill and experience; the question, when put to such a person, is solely a matter of opinion, and this is probably the reason why the evidence of experts upon the opposing sides of a case is so often contradictory and conflicting upon this point. The expert is unable to place himself just in the position of the ordinary workman, and hence his evidence is a mere matter of opinion.

1 *Brooks vs. Jenkins, 1 Fisher's Pat. Reports, 43. Parker vs. Stiles, 1 Fisher's Pat. Reports, 319. Singer vs. Walmsley, 1 Fisher's Pat. Reports, 558.*

If there are drawings attached to the patent, they form a part of the specification, and if the invention can be put in practice by means of the drawings and specification, that is sufficient.[1]

A specification is not ambiguous simply because the name or title given to the invention is not strictly correct. We are to look into the whole description to find what the invention is, and the title given to it signifies but little.[2] If, however, the name or title were to be one thing, as a sewing-machine, and the real invention were quite another thing, as a steam-engine, that would probably be a fatal repugnancy.[3]

If it is necessary to describe the whole of an old machine in order to show the operation of some new part or improvement which forms the invention, then the whole machine should be described;[4] but a patentee is not required to describe in detail things which are old, well-known, and within the knowledge of a person fairly skilled in the art to which the invention appertains. It is not necessary that the drawings should be to a scale, unless the exact relative size of the parts is absolutely essential to the working of the invention, nor need the exact dimensions of common mechanical elements, such as wheels, levers, racks, and pulleys, be given, if these are things which an ordinary mechanic can readily determine.[5] The elements of form, size, and number, though ordinarily unimportant, become important when form, size, and number are of the essence of the invention. An invention in plow-plates furnishes an instance where form may become important;

1 *Singer vs. Walmsley, 1 Fisher's Pat. Cases, 558. Pitts vs. Wemple, 2 Fisher's Pat. Cases, 10. Hogg vs. Emerson, 1 Fisher's Pat. Reports, 598.*

2 *Sickles vs. Gloucester Mfg. Co., 1 Fisher's Pat. Cases, 222.*

3 *Goodyear vs. New-Jersey Central Railway Co., 1 Fisher's Pat. Cases, 626.*

4 *Wintermute vs. Redington, 1 Fisher's Pat. Cases, 239.*

5 *Brooks vs. Jenkins, 1 Fisher's Pat. Reports, 42.*

a small rotary cutter for cutting glass furnishes an instance where both form and size may become important; and some varieties of grinding-mills furnish instances where number or duplication of parts may become essential.

An inventor is required to specify and describe the best mode he knows of putting his invention in practice when several modes may be employed, and, if he describes an inferior mode when he knows and himself practices a better one, that creates an ambiguity in his description.[1]

A patentee must not say in his specification that a whole class of substances, as acids, will answer a certain purpose, when, as a matter of fact, only some ones of that class will answer; and he must not make use of terms designed to mislead those who attempt to work from his specification. The patentee must make a disclosure as open, full, clear, and honest as possible, of the best method he knows of putting his invention in practice. He is not entitled to the protection of a patent, if he does less than this.

If a patentee makes a mistake in a trivial matter, and the mistake is one that a properly skilled person would readily see and overcome, that does not create an ambiguity. If an invention were of so high an order and so intricate in its construction as to require a very highly skilled or scientific person to comprehend it and put it in practice, then the specification must be taken to be addressed to such persons and not to mere mechanics of any grade. Babbage's calculating-machine and the House and the Hughes printing-telegraph instruments furnish instances of such inventions; and it is always a thing of importance to determine to what class of persons a specification must be held to be addressed. Having determined to whom a specification is properly held to be

1 *Page vs. Ferry, 1 Fisher's Pat. Cases, 298.*

addressed, the question then is, Can such a person, working by the specification and drawings if any, put the invention in practice without invention or experiment of his own?

It must always be remembered, that to adjudge a specification ambiguous creates a forfeiture that the law does not favor, and it must be quite clear that a specification is ambiguous, insufficient, and uncertain, before a court will thus hold it.

Ambiguity in the Claim. This is a very different thing from ambiguity in the description. An invention may be fully, clearly, and perfectly described, so that a properly skilled person might, from the description, be able to put the invention into practice without any invention or experiment of his own, and yet in the summary at the end, technically called the claim, he may, by inadvertence or design, so loosely and inaccurately specify what he claims to be his invention, that there can not be gathered from it what he means to claim; and, in this case, there is an ambiguity in the claim. A patentee is required to specify clearly and exactly in what his invention consists, that the public may be informed of the extent of his exclusive right, and may therefore know what infringes the patent and what does not.[1]

The courts have laid it down, in numerous cases, that the patentee must distinctly point out what is old or well known before, and then distinguish the old from the new; but it is now held that this is done by a properly worded claim, even if the patentee do not, in set terms, say that such and such things are old; and that every part and

1 *Brooks vs. Jenkins, 1 Fisher's Pat. Reports, 43. Judson vs. Moore, 1 Fisher's Pat. Cases, 544.*

thing not included in the technical claim is, by the act of such omission, impliedly admitted to be old.[1] This is the method now generally followed in drawing specifications, and it is legal and sufficient in this particular. If form, size, number, or quality are material and of the essence of invention, then it will not be sufficient to simply mention, in the claim, the thing having one of these attributes without the additional mention of such attribute; as, for instance, if it is material that a certain part shall be made of steel of a certain hardness or temper, then that part must be mentioned, in its place, in the claim, as of such hardness or temper: for if the part were mentioned simply as of steel, then the patent would seem to cover such part made of steel of any and all degrees of hardness; and the public would not be informed of what degree of hardness such part might be made without infringing the patent. A claim is, however, to be construed in connection with the description in the specification; and if it is clear, from the claim and description, taken together, what the patentee intends to assert an exclusive right to, that is sufficient.[2]

The claim is ambiguous when there can not be gathered from it, in connection with the description, what it is to which the patentee intends to assert an exclusive right.

Nature of the Claim. It is required that, somewhere in the specification, the patentee shall state and define the extent and nature of that to which he means to assert an exclusive right. This is usually done in a short summary at the end of the specification, and this summary is technically called the "claim," in distinction from the descriptive part of the specification. The claim

1 *Winans vs. New-York & Erie Railway Co., 1 Fisher's Pat. Cases, 213.*

2 *Hogg vs. Emerson, 1 Fisher's Pat. Reports, 598. Pitts vs. Wemple, 2 Fisher's Pat. Cases, 10.*

is, so to speak, the vital part or soul of the patent.[1] It must be confined to the patentee's exact invention, and include no more.

If the invention is a machine which is wholly new, a claim to the machine as such would be valid; but, if the invention be a new combination of old parts, then it must be claimed as such, and not otherwise. If the combination be composed of elements some of which are new and some of which are old, the patentee may make a claim to each of the new parts specifically, and to the combination of the whole.[2]

If the invention is only an improvement on some prior thing, then it should be so claimed. There is no limitation to the number of different clauses of claim in a patent, and the patentee may make as many clauses of claim as are necessary to fully protect and cover the invention. The rights of the patentee are measured by his claim; and, though he may have invented several different parts or combinations, another person does not infringe the patent who makes or uses or sells the parts or combinations which are not claimed, — so that, if the claim is not as broad as the invention, the patentee has to bear the consequences.[3] Defects of this kind can be cured by a re-issue, a subject hereinafter treated.

This defect is one that affects the patentee, and does not make the patent void; for the patent may be perfectly valid as to the claims it has, while the patentee may be entitled to make much broader claims. If, however, the patentee claims as his invention more than he is legally entitled to, and if his claim is broader than his real inven-

1 *Many vs. Jagger, 1 Fisher's Pat. Reports, 222.*

2 *Foss vs. Herbert, 2 Fisher's Pat. Cases, 31.*

3 *Rich vs. Close, 4 Fisher's Pat. Cases, 279. Kidd vs. Spence, 4 Fisher's Pat. Cases, 37. Meissner vs. Devoe Mfg. Co., 5 Fisher's Pat. Cases, 285.*

tion, then the patent is void as to such claims or clauses of claim,[1] though if there are different clauses of claim, the patent will be held valid as to those clauses which are not too broad, unless the defect is one that was caused willfully by the patentee, and with the express design, to mislead and deceive the public as to the extent of his exclusive right. Where there are different clauses of claim, some of which are too broad, the defect may be cured by filing a disclaimer, of which more hereafter.

Although a patentee is not held to any technical forms in making his claim,[2] the person who draws the claim should determine, in his mind, before drawing the claim, whether the invention is an art, — that is, a process, — a machine, a manufacture, or a composition of matter, and the claim should be drawn to correspond with the invention; for if he clearly claims a machine when the real invention is a process, or a process when the invention is a machine, the patent will be invalid. In an English case, where the real invention was a process for preparing flax for spinning, the patentee claimed the machine he made use of, which was old, and the patent was declared void.[3]

A claim can not be made to an abstract principle or for the discovery of a natural property of a substance; but it must be for the principle as applied, or for a mode or manner of application.[4] It can not be for all ways of doing a thing, or for a result, no matter how produced.

Courts will support a claim, if it is possible to do so without doing violence to the meaning of language, but will do no more.[5]

1 *Blake vs. Stafford, 3 Fisher's Pat. Cases, 294.*

2 *Ibid.*

3 *Kay vs. Marshall, 2 Webster's Pat. Cases, 34-84.*

4 *Foote vs. Silsby, 1 Fisher's Pat. Reports, 268.*

5 *Parker vs. Sears, 1 Fisher's Pat. Cases, 93. Ransom vs. The City of New-York, 1 Fisher's Pat. Reports, 252. Burden vs. Corning, 2 Fisher's Pat. Cases, 476.*

Patent Office Procedure upon an Application. The petition, specification, and oath are usually connected together. When these, with the fee, drawings, and model, are all filed in the Patent Office, free of expense to the Office, and not before, the application is in shape for examination, by the proper examiner. The examiner who is put in charge of the application, then makes a search through the American, English, and French Patent Reports, through the files of the rejected cases in the Patent Office, and through the books of reference treating upon subjects to which the invention is allied: if he finds no prior device which anticipates the invention, in whole or in part, the patent is at once allowed. If the invention should happen to conflict with a caveat still in force, the application is filed away and other proceedings had, as explained in the chapter on Caveats. If there are two or more clauses of claim, the examiner may find that some of the clauses are anticipated, while others are not; in such case he only objects to those he finds anticipated. He may find that the inventor is entitled to a claim differently drawn from that presented in the application; and, in such case, he either rejects the case and leaves it to the judgment of the inventor or his solicitor how the claim shall be amended, or he may suggest an acceptable form of claim.

Practically, there are a number of exceptions that examiners are accustomed to take. If the exception is a question of law or of practice, in distinction from one of novelty, it is appealable directly to the Commissioner in person.

When an application is rejected, in whole or in part, upon the ground of want of novelty, the examiner cites the references upon which he bases his rejection, and the Office will, upon request, furnish to the applicant a copy of all such references, if in possession of the Office, which

is usually the case, on payment of the cost of making such copies. If the applicant finds, on looking at the references, that the examiner is mistaken, he may argue the case with the Office, in writing, and request another consideration, or he may amend, by changing his description or claim, or both of them, in such a way as to avoid conflict with the references. The applicant has the right to amend and argue as often as the examiner presents a new reference; but when a claim or clause of claim has been rejected a second time upon the same references, and without any substantial change being made in such rejected claim, the applicant can amend or argue no further before the examiner-in-charge, unless he gets the permission of the Commissioner to that effect.

Appeals. When one or more clauses of claim have been thus twice rejected by the examiner-in-charge, the applicant may then, if he chooses, take an appeal to the board of examiners-in-chief, paying a Government fee of ten dollars thereon, and filing written reasons of appeal; and a personal hearing may also be had, if requested.

If the examiners-in-chief still reject, another appeal can be taken to the Commissioner in person, upon payment of a Government fee of twenty dollars, and filing, as before, written reasons of appeal, and here, also, a personal hearing can be had, if desired.

If the Commissioner rejects, an appeal can be taken from him to the Supreme Court of the District of Columbia, upon payment of a docket fee of ten dollars, furnishing the court copies of all the papers in the case, and filing written reasons of appeal. It is expected that the case will be argued orally before the court.

If this court does not allow the application, a still further

proceeding can be had, in the nature of an appeal, by a bill in equity filed in a United States Circuit Court having jurisdiction, and an appeal can be taken from this court to the United States Supreme Court.

Upon the allowance of the patent, there is to be paid a final Government fee of twenty dollars, when the patent will be issued to the applicant, containing a printed copy of the specification and a photo-lithographed copy of the drawing.

Skilled counsel is very important in the preparation and prosecution of an application; but, if an inventor deems it advisable to attempt the task himself, he should first procure the Patent Office "rules of practice" and study them till he thoroughly understands them.

CHAPTER XV.

RE-ISSUES AND DISCLAIMERS.

RE-ISSUE. The statute enacts (section 53, Act of July 8, 1870), "That whenever any patent is inoperative or invalid, by reason of a defective or insufficient specification, or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new, — if the error has arisen by inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, — the Commissioner shall, on the surrender of such patent and the payment of the duty required by law, cause a new patent for the same invention, and in accordance with the corrected specifications, to be issued to the patentee, or, in the case of his death, or assignment of the whole or any undivided part of the original patent, to his executors, administrators, or assigns, for the unexpired part of the term of the original patent, the surrender of which shall take effect upon the issue of the amended patent; and the Commissioner may, in his discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for a re-issue of each of such re-issued letters-patent. And the specification and claim in every such case shall be subject to revision and restriction in the same manner as original applications are. And the patent so re-issued, together with the corrected specification, shall have the effect and operation in law, on the trial of all actions for

"causes thereafter arising, as though the same had been "originally filed in such corrected form; but no new "matter shall be introduced into the specification, nor, "in the case of a machine patent, shall the model or "drawings be amended, except each by the other; but "when there is neither model nor drawing, amendments "may be made, upon proof satisfactory to the Commis- "sioner, that such new matter or amendment was a part of "the original invention, and was omitted from the specifica- "tion by inadvertence, accident, or mistake, as aforesaid."

The Government fee required by law is thirty dollars, which must be paid with the application for the re-issue. In case the re-issued patent is to be separated into different divisions, the fee of thirty dollars must be paid for each of such divisions.

A re-issue is for the purpose of correcting any unintentional mistake in either the specification or drawings or both. Ambiguity in the description or claim, as well as any inaccuracy in the extent of the claim, or in its nature, — as if, for instance, the invention is claimed as a machine when it is really a process, — may be cured by a re-issue. Wrong dates may be cured by a re-issue.

The claim in the re-issued patent may be either broader or narrower than the claim in the original patent; the patentee may omit all or a part of the old claim, and put in a wholly or partly new claim.[1] The re-issued patent must, however, be for the same invention as the original patent;[2] and a patentee can not include, in a re-issue, improvements he has made since his application for the original patent. Such improvements are proper subject-matter for a new and original patent.

1 *Hussey vs. McCormick, 1 Fisher's Pat. Cases, 509.*

2 *French vs. Rogers, 1 Fisher's Pat. Cases, 133. Hoffheins vs. Brandt, 3 Fisher's Pat. Cases, 218.*

The wording of the description and claim in a specification may be altered at will in a re-issue, subject to the the qualification that the re-issued patent be for the same invention as the original, and subject to the further qualification that no new matter be interpolated. New matter is that which is not contained or shown in either the original specification, model, or drawings,[1] and, in the case of a machine patent, the model and drawings can not be amended by the original specification, but only by each other.

The rule is, that the patentee is entitled to describe, show, and claim in his re-issued description, drawings, and claim, anything that he might have legally shown, described, and claimed at the time he made his original application,[2] such rights to be based upon the model and drawings filed with his original application. A patent may be re-issued, with proper intent, any number of times.[3] A patent may be re-issued as well during an extended term as during an original term.[4]

According to the provisions of the Act of July 8, 1870, the application for re-issue can only be made by the original inventor, if living, by and with the consent of the assignee of the whole patent, if the patent has been assigned; but, by a later act, the assignee can, without the co-operation of the inventor, make the application, when the assignment was made prior to July 8, 1870. All owners of undivided interests in a patent must join in its surrender.

It is not in the power of a patentee, by a re-issue of his patent, to affect the rights of other parties, to whom an

1 *Chicago F. H. Co. vs. Busch, 4 Fisher's Pat. Cases, 395. Buerk vs. Valentine, 5 Fisher's Pat. Cases, 366.*

2 *Smith vs. Whisen, 3 Fisher's Pat. Cases, 343.*

3 *Potter vs. Holland, 1 Fisher's Pat. Cases, 327.*

4 *Gibson vs. Harris, 1 Blatchford, 167.*

interest in the whole or a part of the patent has previously passed, without their consent; but such consent can be given before or after the re-issue. A person to whom an interest in the original patent has passed, as a licensee or a grantee, is entitled to the same rights under a re-issue that he had under the original; but he may choose to retain his rights under the old patent, and the law gives him the right so to do, but he can not have different rights under both the original and the re-issue.[1]

Although a patentee may not re-issue his patent for years, yet, when he does so, and claims in the re-issue things not claimed in the original patent, but which were shown in the original drawings or model, he can not be held to have forfeited his right to the things thus newly claimed, under a charge of public use or abandonment.[2]

A patent need not be wholly and totally void in order to warrant a re-issue; for, if the claim in a patent is not as broad as the real invention, then the patent is inoperative and invalid *pro tanto*, and warrants a re-issue to cure the defect.

The action of the Commissioner, in re-issuing a patent, is evidence that the original and the re-issued patents are for the same invention; but if the two patents are clearly, and on their faces, for different things, that destroys the effect of such evidence.[3]

Patents can only be re-issued to cure defects which happened by accident, inadvertence, or mistake; and if defects were introduced designedly into the original patent, with fraudulent or deceptive intention, that destroys the right to a re-issue.

1 *Potter vs. Holland, 1 Fisher's Pat. Cases, 327.*
2 *Moffit vs. Gaar, 2 Fisher's Pat. Cases, 610.*
3 *Graham vs. Mason, 5 Fisher's Pat. Cases, 1.*

In making an application for re-issue, no new model is requisite, unless the model is to be amended by the original drawings; but the Patent Office requires a petition, specification, oath, and new drawings, the fee of thirty dollars, and a certified abstract of title, which the Office must be paid for making; and the original patent must be surrendered, and, if lost, an oath must be made to the fact of such loss, and a certified copy furnished in its stead. The original patent thus surrendered is not returned, if a re-issue is made; but, if the desired re-issue is refused, the case can be dropped, and then the old patent is returned. The applicant for re-issue has the same rights before the examiner-in-charge, and on appeal, as in an original application.

A re-issue does not, in any manner, extend the term for which the patent was originally granted, for the patent is only re-issued for the unexpired part of the original term. If an invention is defectively claimed, so that the patentee is not able to prevent the manufacture, sale, or use of the patented thing by others, because of his defective claim, he may cure the defect by re-issue, and then the wrongful makers, or vendors, or users, will be infringers, and the manufacture, sale, and use by them can be prevented by the patentee; and the wrongful acts prior to the re-issue do not give the wrong-doers any right to continue such acts after the re-issue. One important consequence of a re-issue is, that the patentee can not, after re-issue, recover any damages for infringement prior to re-issue; for the old patent must be surrendered to procure a re-issue, and all suits and causes of action for infringement die with the surrender.

Disclaimers. The statute enacts (section 54 of the

Act of July 8, 1870), "That whenever, through inadvert-
"ence, accident, or mistake, and without any fraudulent
"or deceptive intention, a patentee has claimed more than
"that of which he was the original and first inventor
"or discoverer, his patent shall be valid for all that
"part which is truly and justly his own, provided the same
"is a material or substantial part of the thing patented;
"and any such patentee, his heirs or assigns, whether of
"the whole or of any sectional interest therein, may, on
"payment of the duty required by law, make disclaimer
"of such parts of the thing patented, as he shall not
"choose to claim or to hold by virtue of the patent or
"assignment, stating therein the extent of his interest
"in such patent; said disclaimer shall be in writing, at-
"tested by one or more witnesses, and recorded in the
"Patent Office, and it shall thereafter be considered as
"part of the original specification to the extent of the
"interest possessed by the claimant and by those claiming
"under him, after the record thereof. But no such dis-
"claimer shall affect any action pending at the time of its
"being filed, except so far as may relate to the question of
"unreasonable neglect or delay in filing it."

And further, on the same subject, in section 60: "That
"whenever, through inadvertence, accident, or mistake,
"and without any willful default or intent to defraud or
"mislead the public, a patentee shall have (in his specifica-
"tion) claimed to be the original and first inventor or
"discoverer of any material or substantial part of the thing
"patented, of which he was not the original and first
"inventor or discoverer as aforesaid, every such patentee,
"his executors, administrators, and assigns, whether of the
"whole or any sectional interest in the patent, may main-
"tain a suit at law or in equity, for the infringement of

"any part thereof, which was *bona fide* his own, provided "it shall be a material and substantial part of the thing "patented, and be definitely distinguishable from the "parts so claimed, without right as aforesaid, notwith- "standing the specifications may embrace more than that "of which the patentee was the original or first inventor or "discoverer. But in every such case in which a judgment "or decree shall be rendered for the plaintiff, no costs "shall be recovered, unless the proper disclaimer has been "entered at the Patent Office before the commencement "of the suit; nor shall he be entitled to the benefits of "this section, if he shall have unreasonably neglected or "delayed to enter said disclaimer."

The Government fee, on filing a disclaimer, is ten dollars.

Who May Disclaim. A disclaimer may be filed by the owner or owners of the whole patent, or the grantee of a sectional interest. Licensees can not, probably, disclaim, though it would seem, on principle, that an assignee of an undivided part of the patent might. A disclaimer affects the rights only of those who join in it, though an assignee or grantee would take the rights and position of his assignor or grantor.[1] The disclaimer must state the interest in the patent held by the party disclaiming.[2]

Unreasonable Delay in Filing. If a party, entitled to file a disclaimer, unreasonably neglects or delays to file a disclaimer, when the same is necessary, his patent is void, so far as his interest in it is concerned; and it makes no difference, in considering this question, whether

1 *Potter vs. Holland, 1 Fisher's Pat. Cases, 327.*
2 *Brooks vs. Bicknell, 3 McLean, 439. Silsby vs. Foote, 14 Howard, 221.*

the disclaimer is filed before or during the pendency of a suit brought upon the patent.[1] The delay commences when knowledge of the need of the disclaimer is first brought home to a party entitled to file it,[2] though a patentee could hardly be expected to take the opinion of any one other than that of a judge having jurisdiction, as satisfactory evidence of the invalidity of a part of his patent, although, if the fault were a very glaring one, it might be held otherwise. The Supreme Court has said, that, where a claim has received the sanction of the Patent Office, and has been held valid by a circuit court, the patentee has the right to insist on the validity of the claim till the Supreme Court has passed upon it.[3] In another case, the Supreme Court held, that, where a patent was obtained in 1845, and there were numerous suits on the patent up to 1854, when a question arose as to whether a clause of the claim in the patent was not invalid for want of novelty, but such question was not an issue in the case then on trial; and such case coming, in 1856, to a higher court, the clause in question was declared void, yet there had been no unreasonable delay in filing a disclaimer.[4]

The Supreme Court held, in the case last referred to, that the question of unreasonable delay in filing a disclaimer, is a question of law, and this decision has been followed in other cases,[5] though it had been formerly held that such question is a mixed question of law and fact,[6] and in another case it has been held to be a question of

1 *Wyeth vs. Stone, 1 Story, 295. Reed vs. Cutter, 1 Story, 600. Brooks vs. Bicknell, 3 McLean, 449.*

2 *Singer vs. Walmsley, 1 Fisher's Pat. Cases, 558. Parker vs. Stiles, 1 Fisher's Pat. Reports, 319.*

3 *O'Rielly vs. Morse, 15 Howard, 122.*

4 *Seymour vs. McCormick, 19 Howard, 106.*

5 *Singer vs. Walmsley, 1 Fisher's Pat. Cases, 558. Parker vs. Stiles, 1 Fisher's Pat. Reports, 319.*

6 *Brooks vs. Bicknell, 3 McLean, 449.*

fact,[1] which it would seem to be, though the opinion of the Supreme Court is not to be gainsayed. If a party defendant would avail himself of an unreasonable delay to file a disclaimer, he must set up the charge in his answer.

Disclaimer During Suit. Although a party entitled to file a disclaimer may not have unreasonably delayed in filing the same, yet, if he has occasion to file one during the pendency of a suit brought by him on the patent, he can not recover the costs in the suit, though it will not affect his recovery of damages.

"When a patent contains several claims, and the inven-
"tion covered by one of them is not new, or is absolutely
"void, the patentee may maintain an action for the in-
"fringement of the patent, so far as it regards the valid
"claims, although he did not make or record a disclaimer
"of the invalid or void claim before the commencement
"of the action."[2]

It was held, in one case, that a perpetual injunction would not be granted, if a necessary disclaimer had not been filed previous to the commencement of the suit;[3] but it has since been held differently,[4] and the later decision will probably be followed in future.

Nature of a Disclaimer. A disclaimer is, when filed, to be considered as a part of the specification, in considering the rights of the party filing it. It may strike out one or more clauses of claim, or it may modify all or a part of the claim, and, when there is but a single clause of claim, it may modify that.

1 *Burden vs. Corning, 2 Fisher's Pat. Cases, 477.*

2 *Carhart vs. Austin, 2 Fisher's Pat. Cases, 549. Hall vs. Niles, 2 Blatchford, 194. Vance vs. Campbell, 1 Black, 429.*

3 *Wyeth vs. Stone, 1 Story, 295.*

4 *Myers vs. Frame, 4 Fisher's Pat. Cases, 493.*

The claim in a patent was for "the use and application "of glue or glue-composition in the tubing, substantially "as described, for the purpose of making the flexible "tubing gas-tight, whether of cloth, or rubber or other "gums." Pending a suit for infringement of this patent, a disclaimer was filed to that part of the claim "which "claims as an improvement in flexible tubing for illumina- "ting-gas, the use and application of glue, thereby limiting "the claim to the use and application of glue-composition "in the tubing." Held to be a valid disclaimer.[1]

There is no limitation to the number of disclaimers which may be filed.

1 *Taylor vs. Archer, 4 Fisher's Pat. Cases, 449. See Myers vs. Frame, 4 Fisher's Pat. Cases, 493.*

CHAPTER XVI.

INTERFERENCES.

THE statute enacts, "That, whenever an application "is made for a patent which, in the opinion of the "Commissioner, would interfere with any pending applica- "tion or with any unexpired patent, he shall give notice "thereof to the applicants, or applicant and patentee, "as the case may be, and shall direct the primary examiner "to proceed to determine the question of priority of inven- "tion. And the Commissioner may issue a patent to the "party who shall be adjudged the prior inventor, unless "the adverse party shall appeal from the decision of the "primary examiner, or of the board of the examiners-in- "chief, as the case may be, within such time, not less than "twenty days, as the Commissioner shall prescribe."[1]

The Commissioner is authorized, by statute, to establish rules for taking affidavits and depositions in these cases.[2] He has established such rules, and copies can be had, free of charge, upon application to him by letter or in person. Officers having authority to take depositions, as justices of the peace, notaries public, etc., are proper officers before whom to take interference evidence.[3]

If witnesses are willing to appear and testify, without subpœna, they can do so; but they can be forced to appear and testify, by means of a subpœna and process, which can

1 *Section 42, Act of July 8, 1870.*
2 *Section 43, Act of July 8, 1870.*
3 *Ibid.*

be procured from clerks of United States courts.[1] Witnesses thus subpœnaed, and in attendance, are allowed the same fees as witnesses in the United States courts; but a witness can not be compelled to attend at any place more than forty miles from the place where he is served with the subpœna, nor can he be compelled to attend, unless his fees for one day's attendance and his traveling expenses to and from the place of examination are tendered to him with the service of the subpœna; and he can not be compelled to answer a question which will disclose any secret invention or discovery made or owned by himself.[2]

The Patent Office "rules of practice" say: "An 'interference' is a proceeding instituted for the purpose of "determining the question of *priority of invention* between "two or more parties claiming the same patentable subject-"matter. It may also be resorted to for the purpose of "procuring evidence relating to the alleged abandonment "or the public use of an invention."

"Before the declaration of an interference, all preliminary questions must be settled by the primary examiner, "and the issue clearly defined; the invention which is to "form the subject of the controversy must be decided to "be patentable, and the claims of the respective parties "must be put in such condition that they will not require "alteration after the interference has been finally decided, "unless the testimony adduced upon the trial should necessitate such change."

"An interference will be declared in the following cases:

"1. When two or more parties have applications pending before the Office at the same time, and their respective "claims conflict in whole or in part.[3] When two or more

1 *Section 44, Act of July 8, 1870.* 2 *Section 45, Act of July 8, 1870.*
3 *G. & S. O. S. Co. vs. U. S. D. Co., 3 Fisher's Pat. Cases, 489.*

"applications are pending at the same time, in each of "which a like patentable invention is shown or described, "but not specifically claimed in all of them.

"2. When an applicant, having been rejected upon an "unexpired patent, claims to have made the invention "before the patentee.

"3. When an applicant for a re-issue embraces in his "amended specification any new or additional description "of his invention, or enlarges his claim, or makes a new "one, and thereby includes therein anything which has "been claimed or shown in any patent granted subsequent "to the date of his original application, provided there is "reason to suppose that such subsequent applicant or "patentee may be the first inventor."

An interference is usually brought about by a request to that effect by an applicant for an original or re-issued patent, when the desired claim is refused to such applicant upon reference to some prior patent, and the applicant has reason to think that he may be the first inventor of the device in question; but the Patent Office often takes the responsibility of putting into interference two or more applications, pending at the same time, which show or claim the same patentable subject-matter.

The first step taken by the Office looking toward the declaration of an interference, is the issue of a requirement to each of the parties to file what is called a "preliminary statement," before a day fixed by the Office, giving, under the oath of the party, the date of the original conception of the invention in controversy, the facts and dates of subsequent steps toward reduction to practice, the date of reduction to practice, and the extent of use after reduction to practice. This "preliminary statement" must be sworn to, sealed up, and sent to the Office, where

it is kept secret till the day set for the filing of such statements by all the parties, on which day they are opened to the inspection of all the parties concerned. In subsequent testimony, a party is not permitted to go back of the dates given in his preliminary statement or to contradict its allegations.

The burden of proof is upon the party whose application, showing or claiming the device in issue, was last filed in the Office; and, if such party fails to file a preliminary statement, or, in filing it, to overcome the *prima facie* made by the date of filing an application by another party, or if it shows that he has abandoned his invention or that he allowed the invention to be in public use or on sale for more than two years prior to his application, the case will be adjudged against him at this point, unless the public use appears to affect the rights of the other party or parties, in which latter case the interference will proceed. If the earlier applicant for a patent fails to file a preliminary statement, he will not be allowed, subsequently, to prove the invention by him at an earlier date than the date of filing his application.

If the interference proceeds (as it almost always does) beyond the filing of preliminary statements, the Office sets a time during which the latest applicant for patent must finish the taking of his testimony-in-chief, or his direct evidence, and the other parties have similar times set, in the reversed order of the dates of their respective applications; and after this a time is set for rebutting evidence.

Postponement or extension of these times can be procured upon proper cause being shown by affidavit, a copy of which, together with a copy of the notice of the motion for further time, must be served upon the adverse parties or their attorneys.

An interference properly declared will not be dissolved without judgment of priority being given in favor of one or the other of the parties; but an interference improperly declared, — as if, for instance, the devices shown by the different parties are not really the same, — will be dissolved, upon motion to that effect.

Specifications can not be amended during the progress of an interference, except that, if an applicant has clauses of claim not involved in the interference, they can be withdrawn from the interfering application and made the subject of another and new application.

For a further elaboration of these rules, see the Patent Office "rules of practice."

When the evidence is all in (and this is now required to be printed), the case is considered upon oral, written, or printed argument.

The questions to be answered, with reference to each of the parties, are: First, Was he the prior inventor? Second, Has he abandoned his invention? Third, Did he allow his invention to be in public use or on sale for more than two years prior to his application?

The first question is to be decided in accordance with the principles we have laid down in the previous chapter on "Prior Invention," the second in accordance with the principles laid down in the chapter on "Abandonment," and the third in accordance with the principles laid down in the chapter on "Public Use."

If it should appear that one of the parties had pirated or copied from another, that would destroy all his rights to a patent.

The Office does not recognize the grant of a patent more than two years before the application of another party as necessarily constituting a two years' public use against the

subsequent applicant. Where one of the parties was both first to conceive the invention and the first to reduce it to practice, there can be no comparison of diligence between him and subsequent inventors. Only abandonment or more than two years' public use will defeat his right to a patent.[1]

If it should happen to appear, clearly and unmistakably, that an invention was joint while applied for as sole, or *vice versa*, that would compel the Office to decide against this application *as made;* but that would be solely a question between the Office and the applicant, with which the adverse parties have nothing to do.

There is no limit to the number of interferences to which an application or patent may be subjected, and a patent without going through an interference ordered by the Commissioner is void.[2]

Interference cases are appealable from the interference examiner to the board of examiners-in-chief, upon payment of a fee of ten dollars, and from them to the Commissioner in person, upon payment of a fee of twenty dollars. They are not appealable to the Supreme Court of the District of Columbia;[3] but the applicant who is denied a patent may prosecute his claim by a bill in equity before a United States Circuit Court having jurisdiction,[4] and the case is appealable from this court to the United States Supreme Court.

1 *Rice vs. Winchester, 2 Official Gazette, 348.*
2 *Potter vs. Dixon, 2 Fisher's Pat. Cases, 381.*
3 *Sections 46, 47, 68, Act of July 8, 1870.*
4 *Section 52, Act of July 8, 1870.*

CHAPTER XVII.

INFRINGEMENT.

IT is an infringement of a patent, to either *make*, or *sell*, or *use*, without legal permit, anything which forms the subject-matter of any claim or clause of claim in a valid patent; for a patent conveys to the patentee the exclusive right to do *each* and *all* of these three things during the existence or life of the franchise. A person can not *make*, for his own use or for exportation from the country, without infringing. Judge Story once intimated, that a person might make a patented thing for the purpose of philosophical experiment merely, or to verify the correctness of the specification, but not for profit, without being held an infringer. There seem to be no other excuses which would thus avail.[1]

The intent to infringe is not even necessary,[2] and the patentee need not notify an infringer before bringing suit;[3] for the patent is, in the eye of the law, notice of the patentee's rights to all the world.

A mere workman for the real party in interest is not an infringer,[4] though, if one party were to hire another to make or use patented things, both would be held infringers.[5]

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1 *Whittemore vs. Cutter*, 1 *Gallatin*, 429.
2 *Parker vs. Hulme*, 1 *Fisher's Pat. Cases*, 44.
3 *Ames vs. Howard*, 1 *Sumner*, 482.
4 *Delano vs. Scott*, 1 *Gilpin*, 489.
5 *Keplinger vs. Young*, 10 *Wheaton*, 358. *Woodworth vs. Hall*, 1 *Wood. & Min.*, 248.

The sale of the *materials* of a patented machine, as such, and with no license, express or implied, to use the machine as a machine, is not an infringement.[1]

An assignee, grantee, or licensee can be sued for infringement as well as any one else, if he attempts to exercise rights under the patent not contained in his assignment, grant, or license.[2]

The use of patented articles upon foreign vessels coming into our ports, when such articles were acquired with proper intent at foreign ports, does not constitute infringement.[3]

Sales of patented articles by persons acting as agents for other real owners, the salesmen having no interest, does not make the salesmen infringers.[4]

It has been held, that a purchase, from a wrongful seller, of a patented article, by the patentee or for his account, does not constitute an infringement.[5]

When a grantee of a territorial right under a patent sells the patented articles to another, without any restrictions, such other person may take the articles outside the grantee's territory and sell or use them, without he or the seller being liable as an infringer.[6] Patentees will observe that this decision is a most important one, as affecting their interests, and that all grants should be made upon the express condition, that the grantee shall not sell the patented article to be sold again or used outside his territory, if he can prevent it, and that the grantee shall, when selling the patented article at wholesale, sell with the restriction that such articles shall not be sold outside his territory.

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1 *Sawin vs. Guild, 1 Gallatin, 485.*
2 *Judson & Goodyear vs. Union Rubber Co., 4 Blatchford.*
3 *Brown vs. Duchesne, 19 Howard, 195.*
4 *Potter vs. Crowell, 3 Fisher's Pat. Cases, 112.*
5 *Sparkman vs. Higgins, 2 Blatchford, 30. Byam vs. Bullard, 1 Curtis, 102.*
6 *Adams vs. Burke, 4 Fisher's Pat. Cases, 392.*

In proceeding to determine whether a certain article is an infringement of a patent, it must be compared separately with each clause of claim in the patent; for, if any clause of the claim is infringed, the patent is infringed. The claim is the vital part of a patent, and, no matter whether the actual invention be greater or less, the question of infringement is to be determined upon the claim; for a patentee must stand or fall by the claim he makes.[1]

A patent is infringed by making, using, or selling the thing as described and claimed in the patent; and the thing described and claimed in the patent and another thing are held to be substantially identical, if the same result is attained by the same means or equivalents for them. The topics of "substantial identity" and "equivalents" have been already discussed in former pages of this book, and to them the reader is referred.

A claim will generally, if not always, be either to a specific thing, or to a combination of different elements, whatever be the actual wording, and this whether the invention be an art (that is, a process), a machine, a manufacture, or a composition of matter; and, having determined which the claim is for, it must then be determined whether the thing to be compared with the patent has all the parts or qualities which the claim makes essential, and, if such thing have not all these parts, then it does not infringe. Form, size, and material are not generally essentials, but they may be;[2] but, in any case, it matters not what names are given to parts of a device,[3]—the real question is: Do the parts compared perform the same office in substantially the same way?

1 *Meissner vs. Devoe Mfg. Co., 5 Fisher's Pat. Cases, 285.*
2 *Adams vs. Edwards, 1 Fisher's Pat. Cases, 1.*
3 *Graham vs. Mason, 5 Fisher's Pat. Cases, 1.*

It is not an infringement of a claim for a combination, to make, or use, or sell any of the elements of the combination less than the whole,[1] though additions to a combination will not avoid an infringement,[2] and a man can not use another's patented invention simply because he has made an improvement upon it. That a device works better or worse than the patented device, is not always, nor generally, decisive of substantial difference.[3]

There is one important principle, or rule of construction of the claims of a patent, always to be remembered. If a specific thing claimed, or if an element of a combination is in a new field of invention, and is the first of its *kind*, a court will give the doctrine of equivalents its broadest application as applied to such new thing; but, if the specific thing, or the element of a combination, is itself but new in *degree*, — an improvement upon some prior existing thing for the same purpose, — then the court will only hold those things substantially identical therewith which are mere colorable evasions or obvious substitutes therefor.[4] This is a most important rule of construction; and which of these views is to be taken of a claim, has to be determined often, and generally, by an investigation outside of the patent, so as to determine what was the state of the art, with which the invention was most closely connected, when the invention was made.

To constitute an infringement, it is not always necessary that a person should technically infringe the claim. Where a party had a patent for a combination of a lamp-burner and a lamp-chimney, another party made and sold only the

1 *Cahoon vs. Ring, 1 Fisher's Pat. Cases, 397.*

2 *Johnson vs. Root, 1 Fisher's Pat. Cases, 351.*

3 *Union Paper Bag Co. vs. Binney, 5 Fisher's Pat. Cases, 166. Fales vs. Wentworth, 5 Fisher's Pat. Cases, 302.*

4 *McCormick vs. Talcott, 20 Howard, 405.*

burner, — the judge held such makers of the burners infringers;[1] and, where one party had a patent on a cartridge, and another party made and sold guns designed for firing this cartridge, the gun-maker was held an infringer.[2] In these and similar cases, the *intent* is of importance.

Infringement Suits. Suits for infringement can only be brought in the name of the owner or owners of the patent-right for the district or territory where the infringement is committed. Assignees of the whole patent, or grantees of particular districts, may bring suit in their own names, but licensees can not. The licensor is the proper person to bring suit for injury, in the nature of infringement, to the rights of the licensee.

Suits for infringement may be either on the case at law or by a bill of complaint in equity. Such suits are now almost always brought to the equity side of the court, for the reason that the complainant may, if he be entitled, get with little trouble, and upon mere motion, a preliminary or provisional injunction. He is not compelled to go into the question of the amount of damages until the court has settled the question of the validity of the patent and the question of infringement; and a perpetual injunction issues against the defendant, as a matter of course, upon a finding by the court that the patent is valid and has been infringed; while, in suits at law, injunctions must be had by separate process, and the trial of the case is lumbered up with the question of damages.

Jurisdiction. Upon this subject, the statute of July 8, 1870, enacts: —

1 *Wallace & Son vs. Holmes, Booth & Haydens, 5 Fisher's Pat. Cases, 37.*
2 *Renwick vs. Pond, 5 Fisher's Pat. Cases, 569.*

"SEC. 55. *And be it further enacted*, That all actions, "suits, controversies, and cases arising under the patent "laws of the United States shall be originally cognizable, "as well in equity as at law, by the circuit courts of "the United States, or any district court having the powers "and jurisdiction of a circuit court, or by the Supreme "Court of the District of Columbia, or of any territory; "and the court shall have power, upon bill in equity filed "by any party aggrieved, to grant injunctions according to "the course and principles of courts of equity, to prevent "the violation of any right secured by patent, on such "terms as the court may deem reasonable; and upon a "decree being rendered in any such case for an infringe-"ment, the complainant shall be entitled to recover, in "addition to the profits to be accounted for by the defend-"ant, the damages the *claimant* [complainant] has sustained "thereby, and the court shall assess the same or cause the "same to be assessed under its direction, and the court "shall have the same powers to increase the same in its "discretion that are given by said act to increase the dam-"ages found by verdicts in actions upon the case; but all "actions shall be brought during the term for which the "letters-patent shall be granted or extended, or within six "years after the expiration thereof.

"SEC. 56. *And be it further enacted*, That a writ of "error or appeal to the Supreme Court of the United States "shall lie from all judgments and decrees of any circuit "court, or of any district court exercising the jurisdiction "of a circuit court, or of the Supreme Court of the District "of Columbia or of any territory, in any action, suit, con-"troversy, or case, at law or in equity, touching patent-"rights, in the same manner and under the same circum-"stances as in other judgments and decrees of such circuit

"courts, without regard to the sum or value in contro-
"versy.

"SEC. 59. *And be it further enacted,* That damages
"for the infringement of any patent may be recovered by
"action on the case in any circuit court of the United
"States, or district court exercising the jurisdiction of a
"circuit court, or in the Supreme Court of the District of
"Columbia or of any territory, in the name of the party
"interested, either as patentee, assignee, or grantee. And
"whenever, in any such action, a verdict shall be rendered
"for the plaintiff, the court may enter judgment thereon
"for any sum above the amount found by the verdict as
"the actual damages sustained, according to the circum-
"stances of the case, not exceeding three times the amount
"of such verdict, together with the costs."

All suits for infringement must be brought in United States courts, as must all suits intended to pass upon the validity of patents, though state courts have authority to enforce contracts relating to patents, such as contracts to assign or covenants contained in a license; and it would seem that, where a state court has parties properly before it, and a patent comes in question collaterally, its validity may be inquired into.[1]

Two things must concur to give a United States court jurisdiction, — the offense of infringement must be committed and process served upon the infringer within the territorial limits of the district over which the court holds sway.

Perpetual Injunctions. When, in the course of an equity suit, the court, on final hearing upon pleadings and proofs, finds that the patent is valid, and that it has been

1 *Meserole vs. Union Paper Collar Co., 3 Fisher's Pat. Cases, 483.*

infringed, the court grants, as a matter of course, a perpetual injunction against the infringer, enjoining and restraining him from any further infringement, and, if the party thus enjoined does further infringe in defiance of such injunction, he can be committed to jail for contempt of court. The same kind of injunction will be issued by the equity side of a court when a like finding has been made in a suit at law.

Provisional Injunctions. There is another kind of injunction, other than the perpetual, which is often applied for by the plaintiff or complainant in a patent suit, and which may be granted or withheld, as the judge in his sound discretion may decide. These injunctions are asked for at the commencement or during the progress of a suit, with the intent that the defendant may be restrained from infringing until the final determination of the case and the plaintiff's right to a perpetual injunction is determined.

Strictly speaking, there are no such things as precedents in the practice of granting or withholding provisional injunctions;[1] for every petition for one is addressed to the sound discretion of the judge, as applied to the facts of the case, yet there are some recognized and general rules with regard thereto.

In the first place, courts will not, as a rule, grant a provisional injunction, unless, —

FIRST, — There has been some previous adjudication on (and sustaining) the patent, where the same points of validity and infringement were in issue, or unless,

SECOND, — There has been a long and undisputed enjoyment of the patent privilege under the patent, and the

1 *Earth Closet Co. vs. Fenner, 5 Fisher's Pat. Cases, 15.*

plaintiff is able to make it appear that the defendant's device and his own are substantially identical.

Where there has been no previous adjudication on the patent, and the defendant is able to raise a strong doubt in the mind of the judge as to the validity of the patent, or as to whether his device is substantially identical with the plaintiff's, questions of fact, for the court can at one time as well as another determine questions of law, a provisional injunction will be refused.

When a provisional injunction would operate unjustly upon the defendant, or when it would cause him irreparable injury, while the plaintiff could have ample satisfaction in money damages, the provisional injunction will be refused.[1]

Where the plaintiffs are in the habit of granting licenses under their patent, the court will sometimes refuse a provisional injunction, unless the defendants refuse to take and pay for a license.[2]

As a lesser hardship upon the defendants, and especially when a provisional injunction would work great harm to the defendant, or when the court is not clear that an injunction should issue, the court will sometimes order that the defendants keep an account of profits, and give bond for payment of damages, pending the continuance of the suit.

Damages. In an action at law, the plaintiff must offer evidence at the trial whereby the jury can estimate the profits made by the defendant and the loss suffered by the plaintiff through the infringement; but, in an equity suit,

1 *Earth Closet Co. vs. Fenner, 5 Fisher's Pat. Cases, 15. Thayer vs. Wales, 5 Fisher's Pat. Cases, 130. Union Paper Bag Co. vs. Binney, 5 Fisher's Pat. Cases, 166. Fales vs. Wentworth, 5 Fisher's Pat. Cases, 302. Miller vs. Androscoggin Pulp Co., 5 Fisher's Pat. Cases, 340. Cook vs. Ernest, 5 Fisher's Pat. Cases, 396. Mowry vs. Grand Street & North River Railroad Co., 5 Fisher's Pat. Cases, 586.*

2 *Baldwin vs. Bernard, 5 Fisher's Pat. Cases, 442.*

the question of damages is not gone into until the court has sustained the validity of the patent and adjudged an infringement against the defendant, after which the cause is referred to a master-in-chancery for an accounting.

The rule by which the plaintiff's damages are to be computed vary somewhat with the nature of the case. If the plaintiff is in the habit of granting licenses under his patent, relying upon licenses wholly or mainly to make the patent profitable, then the usual price of such a license will be taken as the damages to be found.[1]

In other cases, the rule is to give the plaintiff such damages as will fully remunerate him for the loss caused him by the infringer;[2] and, previous to the Act of July 8, 1870, this was held to be equivalent to the profits made by the defendant through his infringement: but it is now held, that, if the plaintiff's actual loss be greater than the defendant's profits, the plaintiff may collect as damages such excess of loss, together with the defendant's profits.[3] In an accounting before a master-in-chancery, the defendant is compelled to disclose what his actual profits have been. The defeated party in a suit has to pay the legal costs of such suit, but counsel fees are not included therein.

Defenses. The statute of July 8, 1870, enacts:—

"SEC. 61. *And be it further enacted*, That, in any action for infringement, the defendant may plead the general issue, and, having given notice in writing to the plaintiff or his attorney, thirty days before, may prove on trial any one or more of the following special matters:—

1 *Hogg vs. Emerson, 11 Howard, 607. McCormick vs. Seymour, 3 Blatchford, 224.*

2 *Pierson vs. Eagle Screw Co., 3 Story, 410. Kneass vs. Schuylkill Bank, 4 Washington, 14.*

3 *Carew vs. Boston Elastic Frog Co., 5 Fisher's Pat. Cases, 90.*

"First, — That, for the purpose of deceiving the public, "the description and specification filed by the patentee in "the Patent Office was made to contain less than the whole "truth relative to his invention or discovery, or more than "is necessary to produce the desired effect; or,

"Second, — That he had surreptitiously or unjustly ob- "tained the patent for that which was in fact invented by "another, who was using reasonable diligence in adapting "and perfecting the same; or,

"Third, — That it had been patented or described in "some printed publication prior to his supposed invention "or discovery thereof; or,

"Fourth, — That he was not the original and first in- "ventor or discoverer of any material and substantial part "of the thing patented; or,

"Fifth, — That it had been in public use or on sale "in this country for more than two years before his appli- "cation for a patent, or had been abandoned to the "public.

"And in notices as to proof of previous invention, "knowledge, or use of the thing patented, the defendant "shall state the names of patentees and the dates of their "patents, and when granted, and the names and residences "of the persons alleged to have invented or to have had "the prior knowledge of the thing patented, and where "and by whom it had been used; and if any one or more "of the special matters alleged shall be found for the "defendant, judgment shall be rendered for him with "costs. And the like defenses may be pleaded in any "suit in equity for relief against an alleged infringe- "ment; and proofs of the same may be given upon like "notice in the answer of the defendant, and with the like "effect."

The defense permitted by the second clause is that of "prior invention," that of the third clause "prior publication," that of the fourth clause "prior use," and that of the fifth clause "public use for more than two years prior to application" and "abandonment,"—all of which topics have been discussed in preceding chapters.

There are other defenses that can be set up. The defendant may charge that the specification is uncertain and ambiguous in the description or the claim or both, that a combination claimed is a mere aggregation, that he has a license, that the plaintiff is not the legal owner of the patent, that the plaintiff has unreasonably delayed to file a disclaimer, or that there is a total lack of utility in the alleged invention; and there are other special defenses.

Questions of Law and Fact. As between a judge and a jury, it is the province of the judge to pass on questions of law, and that of the jury to pass on questions of fact, although in equity cases (which comprise the great majority of all patent cases) it is customary for the judge to pass on questions of fact as well as of law.

Without attempting anything fine and subtle in distinctions, we shall classify, in a general way, the questions which usually arise in patent causes.

Questions of Law. It is for the court to say what the patentee claims and what he does not claim,[1] and it follows that it is for the court to say whether the claim is so drawn that there can be gathered from it what is meant to be claimed; or, in other words, to determine

1 *Washburn vs. Gould*, 3 Story, 157.

whether there is ambiguity in the claim.[1] It is for the court to say whether or not two patents claim the same thing, and it is for the court to say whether the actual invention is one kind of patentable subject-matter, as a process, while another kind, as a machine, is claimed;[2] and, also, whether the invention has statutory utility,— that is, *any* utility, in contradistinction from being frivolous, or insignificant, or pernicious in its purpose.[3]

Questions of Fact. Abandonment is a question of fact.[4] It is a question for the jury, whether two things are substantially identical, and this question may arise when it is attempted to show that the patented thing is anticipated by some prior thing, or in determining whether one thing infringes a certain patent.[5] It is for the jury to say whether a specification is in such full, clear, and exact terms as to enable a properly skilled person to put the invention in practice, working by the specification,— that is, to determine whether there is ambiguity in the description.[6] It is for the jury to say, under the issue of "prior publication," whether the publication is a full anticipation. It is a question of fact, to determine the meaning of technical terms or words of art in a specification;[7] also, whether one device has superior utility over another. Novelty is a question of fact, as it is also to determine whether a concealment or redundancy in a specification is with fraudulent intent;[8] also, whether an

1 *Davis vs. Palmer, 2 Brockway, 388. Emerson vs. Hogg, 2 Blatchford, 6.*

2 *Kay vs. Marshall, 2 Webster's Pat. Cases, 34.*

3 *Langdon vs. De Groot, 1 Paine's Circuit Court Reports, 203. Lowell vs. Lewis, 1 Mason, 182.*

4 *Whittemore vs. Cutter, 1 Gallatin, 482.*

5 *Smith vs. Higgins, 1 Fisher's Pat. Cases, 537.*

6 *Wood vs. Underhill, 5 Howard, 4.*

7 *Washburn vs. Gould, 3 Story, 157.*

8 *Gray vs. James, Peters's Circuit Court Reports, 411.*

original and a re-issued patent are for the same invention.[1] Whether an alleged inventor ever conceived, and when he conceived an invention, whether he ever reduced it to practice, and when, whether the alleged invention was ever in public use, or whether in public use for more than two years prior to application with the inventor's allowance and consent, and whether an invention was sole or joint, — are all questions of fact.

1 *Carver vs. Braintree Mfg. Co., 2 Story, 441.*

CHAPTER XVIII.

EXTENSION.

RELATIVE to this subject, the statute of July 8, 1870, enacts: —

"SEC. 63. *And be it further enacted*, That where the "patentee of any invention or discovery, the patent for "which was granted prior to the second day of March, "1861, shall desire an extension of his patent beyond the "original term of its limitation, he shall make application "therefor, in writing, to the Commissioner, setting forth "the reasons why such extension should be granted; and "he shall also furnish a written statement, under oath, of "the ascertained value of the invention or discovery, and "of his receipts and expenditures on account thereof, suffi- "ciently in detail to exhibit a true and faithful account of "the loss and profit in any manner accruing to him by "reason of said invention or discovery. And said appli- "cation shall be filed not more than six months nor less "than ninety days before the expiration of the original "term of the patent, and no extension shall be granted "after the expiration of said original term.

"SEC. 64. *And be it further enacted*, That, upon the "receipt of such application, and the payment of the duty "required by law, the Commissioner shall cause to be pub- "lished, in one newspaper in the city of Washington, and "in such other papers published in the section of the "country most interested adversely to the extension of the "patent as he may deem proper, for at least sixty days

"prior to the day set for hearing the case, a notice of such "application, and of the time and place when and where "the same will be considered, that any person may appear "and show cause why the extension should not be granted.

"SEC. 65. *And be it further enacted*, That, on the "publication of such notice, the Commissioner shall refer "the case to the principal examiner having charge of the "class of inventions to which it belongs, who shall make "to said Commissioner a full report of the case, and par- "ticularly whether the invention or discovery was new and "patentable when the original patent was granted.

"SEC. 66. *And be it further enacted*, That the Com- "missioner shall, at the time and place designated in the "published notice, hear and decide upon the evidence "produced, both for and against the extension; and, if it "shall appear to his satisfaction that the patentee, without "neglect or fault on his part, has failed to obtain from the "use and sale of his invention or discovery a reasonable "remuneration for the time, ingenuity, and expense be- "stowed upon it, and the introduction of it into use, and "that it is just and proper, having due regard to the public "interest, that the term of the patent should be extended, "the said Commissioner shall make a certificate thereon, "renewing and extending the said patent for the term of "seven years from the expiration of the first term, which "certificate shall be recorded in the Patent Office, and "thereupon the said patent shall have the same effect in "law as though it had been originally granted for twenty- "one years.

"SEC. 67. *And be it further enacted*, That the benefit "of the extension of a patent shall extend to the assignees "and grantees of the right, to use the thing patented "to the extent of their interest therein."

The Government fee upon the filing of an application for extension is fifty dollars, and fifty more upon the allowance, making, in all, one hundred dollars.[1] If a patent has been re-issued into separate divisions, each division is treated as a separate patent, and requires a separate application and separate fees.

Extension of Design Patents. With reference to the extension of design patents, the statute of July 8, 1870, enacts: —

"SEC. 74. *And be it further enacted,* That patentees "of designs issued prior to March 2, 1861, shall be enti- "tled to extension of their respective patents for the term "of seven years, in the same manner and under the same "restrictions as are provided for the extension of patents "for inventions or discoveries, issued prior to the second "day of March, 1861."

The Patent Office has decided that design patents granted between March 2, 1861, and July 8, 1870, are not, since the passage of the Act of July 8, 1870, extensible.[2] As a patent is a bargain between the patentee and the public;[3] as one of the considerations moving from the public to a patentee of a design patented under the Act of March 2, 1861, — and prior to the Act of July 8, 1870, — was that such patent should be, under the usual conditions, extensible; and as there is no express prohibition in the Act of July 8, 1870, against such extensibility, but rather a preservation of the right,[4] — the decision of the Office will probably be found, upon more careful consideration, to be

1 *Section 68, Act of July 8, 1870.*
2 *E. W. Sperry, Commissioner's Decisions, 1870, p. 139.*
3 *Page vs. Ferry, 1 Fisher's Pat. Cases, 298.*
4 *Section 111, Act of July 8, 1870.*

erroneous.[1] Design patents granted under and since the passage of the Act of July 8, 1870, are, clearly, not extensible.

Patent Office Procedure. As the mode of procedure relating to extensions is of special importance, we give under this head the more important portions of the Patent Office rules upon this subject.

The applicant for an extension must file his petition and pay in the requisite fee not more than six months nor less than ninety days prior to the expiration of his patent. No certificate of extension will be signed after the expiration of the patent.

Any person who intends to oppose an application for extension must give notice of such intention to the applicant within the time hereafter named, and furnish him with a statement of his reasons of opposition. He must also immediately file a copy of such notice and reasons of opposition, with proof of service of the same, in the Patent Office. After this he will be regarded as a party in the case, and will be entitled to notice of the time and place of taking testimony, to a list of the names and residences of the witnesses whose testimony may have been taken previous to his service of notice of opposition, and to a copy of the application and of any other papers on file, upon paying the cost of copying. If the extension is opposed on the ground of lack of novelty in the invention, the reasons of opposition should contain a specific statement of any and all matter relied upon for this purpose.

The applicant for an extension must furnish to the Office a statement in writing, under oath, of the ascertained value of the invention, and of his receipts and expenditures on

1 *See Simonds on Design Patents, pp. 207-212.*

account thereof, both in this and foreign countries. This statement must be made particular and in detail, unless sufficient reason is set forth why such a statement can not be furnished. It must in all cases be filed within ten days after filing the petition. No exceptions will be made to this rule. Such statement must also be accompanied with a certified abstract of title and a declaration, under oath, setting forth the extent of applicant's interest in the extension sought.

The questions which arise on each application for an extension are: First, Was the invention new and useful when patented? Second, Is it valuable and important to the public, and to what extent? Third, Has the inventor been reasonably remunerated for the time, ingenuity, and expense bestowed upon it, and the introduction of it into use?—if not, has his failure to be so remunerated arisen from neglect or fault on his part? Fourth, What will be the effect of the proposed extension upon the public interests?

No proof will be required from the applicant upon the first question, unless the invention is assailed upon those points by opponents.

To enable the Commissioner to come to a correct conclusion in regard to the second point of inquiry, the applicant must, if possible, procure the testimony of persons disinterested in the invention, which testimony should be taken under oath. This testimony must distinguish carefully between the specific devices covered by the claims of the patent and the general machine in which those devices may be incorporated.

In regard to the third point of inquiry, in addition to his own oath, showing his receipts and expenditures on account of the invention, the applicant must show, by

testimony under oath, that he has taken all reasonable measures to introduce his invention into general use; and that, without neglect or fault on his part, he has failed to obtain from the use and sale of the invention a reasonable remuneration for the time, ingenuity, and expense bestowed on the same, and the introduction of it into use.

In case of opposition to the extension of a patent by any person, both parties may take testimony, each giving reasonable notice to the other of the time and place of taking said testimony, which shall be taken according to the rules hereinafter prescribed.

Any person desiring to oppose an extension must serve his notice of opposition, and file his reasons therefor, at least ten days before the day fixed for the closing of testimony; but parties who have not entered formal opposition in time to put in testimony may, at the discretion of the Commissioner, be permitted to appear on the day of hearing, and make argument upon the record in opposition to the grant of the extension. But in such case good cause for the neglect to make formal opposition must be shown.

In contested cases, no testimony will be received, unless by consent, which has been taken within thirty days next after the filing of the petition for the extension.

Service of notice to take testimony may be made upon applicant, upon the opponent, upon the attorney of record of either, or, if there be no attorney of record, upon any attorney or agent who takes part in the service of notice or in the examination of the witnesses of either party. Where notice to take testimony has already been given to an opponent, and a new opponent subsequently gives notice of his intention to oppose, the examination need not be postponed, but notice thereof may be given to such subsequent opponent by mail or telegraph. This rule, however, does not

apply to *ex-parte* examinations, or those of which no notice has been given when notice of opposition is served.

In the notice of the application for an extension, a day will be fixed for the closing of testimony, and the day of hearing will also be named. Application for a postponement of the day of hearing, or for further time for taking testimony, must be made and supported according to the same rules as are to be observed in other contested cases; but they will not be granted in such a manner as to cause a risk of preventing a decision prior to the expiration of the patent. Immediately upon the closing of the testimony the application will be referred to the examiner in charge of the class to which the invention belongs for the report required by law; and said report shall be made not less than five days before the day of hearing. As this report is intended for the information of the Commissioner, neither the parties nor their attorneys will be permitted to make oral arguments before the examiner. In contested cases, briefs are deemed desirable, and these should always be filed at least five days before the day of hearing.

The papers, etc., to be forwarded to the Patent Office, which go to make a complete application for an extension, are, —

1. The letters-patent sought to be extended. If these are lost or destroyed, then the applicant must procure from the Patent Office, and file with his application, a certified copy of such letters-patent, accompanied by an affidavit stating the fact of and circumstances attending such loss or destruction.

2. A certified abstract of title to the patent (which has to be procured from the Patent Office).

3. The petition for extension.

4. A statement and account, giving a full history of the invention from first to last, showing the efforts made by the inventor to introduce and develop his invention, and giving, as fully as possible, an account of all income derived from the invention, both in this and in foreign countries, and expenditures and losses on account thereof.

5. An oath to the truth of the statement and account.

6. A fee of fifty dollars.

It is not generally advisable to take testimony in support of an extension till thirty days after the filing of the application, because, if the extension is opposed, the Office will not consider such testimony.

The applicant must furnish the Commissioner with the affidavits of disinterested parties giving data, to enable the Commissioner to form an opinion as to the value of the invention, and the applicant should also furnish, as far as practicable, affidavits of other parties to support his allegations made in his "statement and account."

Any person may oppose an extension, under the conditions laid down by the Office "rules of practice," and, in case of such opposition, testimony may be taken *pro* and *con*, as provided for by the Office rules, and the case regularly argued before the Commissioner.

We can, perhaps, in the space at our disposal, give no better information as to the opinions and practice of the Patent Office in extension cases, than that given by the following selection from the digest of the Commissioner's decisions for 1870: —

IN GENERAL.

"The extension of a patent for a process refused, al-
"though the principle involved had proved to be of
"extraordinary value; it having been rendered available

" for useful purposes only through the great labor and ex-
" pense bestowed upon developing it by another independ-
" ent and original inventor, in which the applicant had
" taken no part." — *Christian Shunk, 10.*

" It is no ground for refusing the extension of a patent,
" that the patentee has sold his interest in it for an inade-
" quate price, if the purchasers have subsequently secured
" to him a substantial remuneration if it is granted." — *Owen Dorsey, 17.*

" A patent will not be extended, if devices not shown in
" the original application have been interpolated on a re-
" issue." — *A. G. Bevin, 68.*

" A patent will not be extended, if the invention mono-
" polized has been anticipated." — *W. H. King, 79.*

NOVELTY AND UTILITY.

" A patent with a claim so broad that it is found to in-
" clude old devices, will be extended only on filing a dis-
" claimer of everything except what is ascertained to be
" new." — *B. F. Avery, 1; R. Pratt's administrator, 2.*

" A patented machine having proved highly useful, the
" differences between it and former unsuccessful machines
" should not be nicely weighed upon a petition for an
" extension." — *Cyrus Chambers, Jr., 124.*

" Patents for impracticable devices should not be ex-
" tended." — *I. M. Singer, 146.*

VALUE AND IMPORTANCE.

" Where the estimate of the value of an invention, pre-
" sented in the statement of the patentee, was founded
" mainly on sales by an assignee who had greatly improved
" the construction of the article, and the only features in it

"really new were found to be of slight importance, an "extension of the patent was refused."—*Calvin Dodge, 23.*

"Where the invention covered by a patent appeared to "be of small value, except as the broad claims embraced in "it enabled the patentee to place others under contribution, "the extension of it was refused."—*J. R. Harrington, 27.*

"Where the evidence as to the value of the inventions "embraced in several divisions of a re-issued patent is "general, and does not discriminate between them, and "some of them are, upon the face of them, comparatively "worthless, the mere estimate of the applicant to the "contrary does not entitle him to an extension of those "divisions."—*W. Hunt's administrators, 29.*

"The Office will inquire whether an invention possesses "sufficient importance to justify the extension of a patent, "although its novelty has been sustained in a suit at law." —*George Johnson, administrator, 86.*

"When it appears that no machine of the nature of the "one patented has ever gone into use, it is to be presumed "that it is of little value; and the patent for it will not be "extended to embarrass other inventors."—*Darlington and Piper, 133.*

AMOUNT OF REMUNERATION.

"Enlarging dies which have been used for forming parts "of a bonnet, so as to form the whole at one operation, "requires little ingenuity, and it may be questioned whether "$2,036.39 is not a sufficient remuneration for it."—*William Osborn's administratrix, 80.*

"Where the evidence of the value of an invention is in- "sufficient, and it is apparently an insignificant one, the "sum of $1,697.58 will be deemed an adequate remunera- "tion for it."—*Charles Moore, 83.*

"Where the patentee has made a close monopoly of his "invention, and would have had no manufacture or profits "but for his patent, he can not, upon applying for an "extension, deduct anything for manufacturer's profits "from the amount he has received."—*Carlos French, 118.*

"A highly valuable patent should be extended where the "patentee has exercised great energy and determination in "introducing the invention into use, though he has realized "$30,000 from it, besides a liberal allowance for his time "and services."—*T. T. Woodruff, 161.*

"A patentee who had given himself mainly to the manu- "facture and sale of his invention, and had realized $33,000 "from it, was held to be entitled to further remuneration, "and his patent was extended."—*Wendell Wright, 167.*

"Where the patentee had been at no expense of time or "labor in obtaining his patent and introducing the inven- "tion into use, and it was not of a high order, the sum of "$62,269, which he had realized from it, was held to be a "sufficient remuneration, and an extension was denied "him."—*J. L. Baudelot, 184.*

DILIGENCE.

"The extension of a patent refused when it appeared "that it had been sold for a trifle about a year after it was "issued, and the ascertained value of the invention was not "set forth in the applicant's statement."—*R. W. Lewis, 8.*

"An extension refused where none of the articles pat- "ented had ever been manufactured; either they must "have been wanting in utility, or no diligence was exerted "in introducing them."—*William Montstorm, 97.*

"A patentee can not have an extension if he has neg- "lected a favorable opportunity to sell his invention at "a remunerative price."—*S. A. Knox, 126.*

"The patentee of a valuable improvement, who had not "the means of introducing it, and sold it for a sum wholly "inadequate to remunerate him, although upon condition "of being furnished with employment in the manufacture, "was allowed an extension." — *George Thompson, 128.*

"The patentee of a warlike invention, who took part in "the rebellion instead of employing it in the service of "the Government, can not be considered as having used "due diligence in introducing it into use, and his patent "for it will not be extended." — *J. B. Read, 137.*

"If it appears that a large amount is due from infringers, "a patent should not be extended." — *I. M. Singer, 146.*

"Where the patentee sold half the patent, and within "three years realized $3,000 from manufacturing jointly "with the purchasers under it, and his executors then sold "the other half for $400, they were held not to have used "proper diligence, and an extension was denied them." — *Gleason and Crossman, 158.*

POLICY.

"In considering the question of extending a patent, the "Commissioner should have regard to the interests of the "public; and, if the extension would be prejudicial to an "extensive and useful business, that may be a sufficient "reason for denying it." — *Henry Bessemer, 9.*

"The extension of a patent for the manufacture of Bes- "semer steel refused, on the ground that the foreign patents "had expired, and the extension would enable foreign "manufacturers to control the business." — *Henry Bessemer, 9.*

"A patent will be extended, although the foreign patents "for the same invention have expired, if the products of

"it manufactured abroad can not be imported so as to "compete in market with those made in this country."—*Henry Voelter, 84.*

"The extension of a patent refused when the patentee "had sold all his interest in it for a trifling consideration." —*William Gage, 100.*

An important thing to be remembered is, that the policy and intent of the law is to grant extensions for the benefit of inventors or their heirs, and not for the benefit of mere assignees; and, if it appear that the inventor has assigned, or agreed to assign, the extension for nothing or for a trifling consideration, the Office will refuse the extension. If, however, the inventor retains a respectable interest in the extended term or assigns upon the consideration of a substantial royalty, that will not prevent the allowance of the extension.

Patents can be extended upon the application of the executors or administrators of deceased inventors for the benefit of the heirs.[1]

Patents of all kinds granted prior to March 2, 1861, are extensible, but patents, other than for designs, granted since that date are not extensible.

Patents are sometimes extended by special act of Congress, and such extended terms stand upon the same footing as if legally granted by the Commissioner of Patents.[2]

When a patent has been extended by the Commissioner, his action is conclusive as to all the facts he is required to find, and can not be, afterward, disputed except on proof of fraud in the allowance of the extension,[3] and an in-

1 *Brooks vs. Bicknell, 3 McLean, 436. Woodworth vs. Wilson, 4 Howard, 716.*

2 *Evans vs. Eaton, 3 Wheaton, 518.*

3 *Colt vs. Young, 2 Blatchford, 473. Clum vs. Brewer, 2 Curtis, 518. Goodyear vs. P. R. Co., 2 Fisher's Pat. Cases, 498.*

fringer can not be permitted to raise the question of fraud in defense of a suit brought against him for infringement.[1]

Neither an assignment, grant, or license made during the existence of the original term will have any force or effect upon an extended term, unless expressly stated as applying to the extended term, or unless the fair implication of the instrument is that it is to have effect under an extended term;[2] but any person legally in possession of a patented machine may continue the *use* of it during the extended term,[3] subject, however, to any conditions or restrictions that existed during the original term.[4]

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1 *Tilghman vs. Mitchell, 4 Fisher's Pat. Cases, 615.*

2 *Woodworth vs. Sherman, 3 Story, 174. Brooks vs. Bicknell, 4 McLean, 66-67. Day vs. Candee, 3 Fisher's Pat. Cases, 9.*

3 *Wilson vs. Rosseau, 4 Howard, 682.*

4 *Day vs. Union Rubber Co., 3 Blatchford, 491.*

CHAPTER XIX.

DESIGN PATENTS.

THE statute of July 8, 1870, enacts as follows upon this subject: —

"SEC. 71. *And be it further enacted*, That any person "who, by his own industry, genius, efforts, and expense, "has invented or produced any new and original design "for a manufacture, bust, statue, alto-relievo, or bas-relief; "any new and original design for the printing of woolen, "silk, cotton, or other fabrics; any new and original im- "pression, ornament, pattern, print, or picture, to be "printed, painted, cast, or otherwise placed on or worked "into any article of manufacture; or any new, useful, and "original shape or configuration of any article of manu- "facture, the same not having been known or used by "others before his invention or production thereof, or pat- "ented or described in any printed publication, may, upon "payment of the duty required by law, and other due pro- "ceedings had the same as in cases of inventions or discov- "eries, obtain a patent therefor."

The Patent Office does not require that models shall accompany applications for design patents. Design patents are granted for three and a half years upon a fee of ten dollars, or for seven years upon a fee of fifteen dollars, or for fourteen years upon a fee of thirty dollars, as the applicant, *in his application*, may elect.[1]

1 *Sections 73-75, Act of July 8, 1870.*

Design patents granted prior to March 2, 1861, are made extensible, like other patents, by section 74 of the Act of July 8, 1870. The Patent Office has decided that design patents granted subsequent to, and under the Act of March 2, 1861, are not, since the passage of the Act of July 8, 1870, extensible;[1] but this is believed to be a mistake.[2] Design patents granted since, and under the Act of July 8, 1870, are clearly not extensible.

The Patent Office has, also, decided that designs are not entitled to two years' use prior to application, like mechanical inventions; but this is also, probably, a mistake.[3]

The Patent Office, until of late, held that new shapes, patterns, etc., whose object and purpose is *utility*, were patentable as designs; but it now, and correctly, holds that only those things,—mentioned in section 71 of the Act of July 8, 1870, as patentable subjects,—whose object and purpose is *æsthetic* or *ornamental*, are properly patentable as designs. This question has lately, and for the first time, been before the Supreme Court, when the latter view was sustained, and the court held that it is the *appearance* given to a tangible object by a design which constitutes the real essence for which a design patent is given, no matter by what means this appearance is produced; and that, if one design is so like another, even if there are minor differences, as to cause a common observer, such as a casual purchaser, giving common and ordinary attention, to mistake the one for the other, then the two designs are substantially identical, and, if one be patented, the other is an infringement.[4]

1 *E. W. Sperry, Commissioner's Decisions, 1870.*
2 *See previous chapter on "Extension."*
3 *Root vs. Ball & Davis, 4 McLean, 177.*
4 *Gorham Mfg. Co. vs. White, 2 Patent Office Gazette, 592: 1872.*

Expert testimony in design cases seems thereby to be done away with.

Applications for design patents receive the same treatment in the Patent Office as applications for other patents.

CHAPTER XX.

FORMS

FOR ASSIGNMENTS, GRANTS, LICENSES, MORTGAGES, ETC.

NOTE. The words in italics are those which are to be changed to suit different cases. Where changes are to be made from singular to plural, or vice versa, italics are not used.

No. 1. Assignment of Entire Interest before Issue of Patent.

IN consideration of *one dollar*, the receipt whereof in full is hereby acknowledged, I hereby sell and assign to *John Smith*, of *Hartford, Connecticut*, the whole right and title to letters-patent of the United States, to be issued upon my application therefor, for improvement in *plows*, which I executed *January 2, 1874* (if application has been filed, say "and filed in the Patent Office.")

Operative Clause.

And I covenant to and with said assignee, his heirs and assigns, that I have full right to assign said invention and letters-patent in manner and form as above written, and that the interest hereinbefore conveyed is free from all prior assignment, grant, mortgage, license, or other incumbrance whatever.

Covenant as to Title.

And I covenant to and with said assignee, his heirs and assigns, that I will, whenever the legal counsel of said assignee, his heirs or assigns, shall advise me that a re-issue of said letters-patent is lawful

Covenant for Re-issues.

and desirable, sign all papers, take all rightful oaths, and do all acts necessary or convenient to the procurement of such re-issue, without charge to said assignee, but at his expense.

Request to Commissioner.

And I authorize and request the Commissioner of Patents to issue said letters-patent to said assignee for the sole use and behoof of said assignee, his heirs and assigns.

In witness whereof, I have hereto set my hand and seal, as of and for the *thirty-first* day of *March*, A.D. *1874*.

A. B. Seal.

No. 2. Assignment of Undivided (Half) Interest before Issue of Patent.

(SAME as No. 1, except as follows: In the operative clause, insert, just before the words "the whole right," the words "one undivided half part of." The covenant for re-issues may well be omitted; and in its place insert, if so desired, the following clause:—)

Joint Protective Condition.

This assignment is made upon the following express condition, forming an integral part of such assignment, to which condition I, for myself, my heirs and assigns, assent by the act of signing this instrument, and to which condition said assignee, for himself, his heirs and assigns, assents by his acceptance of this instrument, or by doing or attempting to do any act under its authority; to wit: neither he nor I have or shall have any right or power to make any license or other privilege under or relating to said patent, without that both and all the owners of the patent join in the same in writing; and nei-

ther he nor I have or shall have, separately, the right to make, or sell, or use any material part of the invention forming the subject-matter of said letters-patent, without that the party thus making, or selling, or using shall secure and pay to the other party or parties, part owners of said patent, such part of the net profits arising from such manufacture, sale, or use as the part of said patent owned by such other party or parties last mentioned, bears proportion to the whole patent.

(The request to the Commissioner should read—)

Request to Commissioner. And I authorize and request the Commissioner of Patents to issue said letters-patent to said assignee and myself jointly, for the sole use and behoof of said assignee and myself, our heirs and assigns.

No. 3. Assignment of Entire Interest after Issue of Patent. By the Inventor.

FOR the consideration of *one dollar*, the receipt whereof in full is hereby acknowledged, I do hereby sell and assign to *Operative Clause.* *John Smith*, of *Hartford*, *Connecticut*, the whole right and title to letters-patent of the United States, No. *142,456*, dated *July 4, 1873*, for improvements in *plows*, to be held and enjoyed by him, his heirs and assigns, for the full term of said patent.

(Insert covenant as to title and covenant for re-issue, as in No. 1.)

In witness whereof, I hereto set my hand and seal, as of and for the *thirty-first* day of *March*, A.D. *1874*.

A. B. Seal.

No. 4. Assignment of Undivided (Half) Interest after Issue. By the Inventor.

(SAME as No. 3, except as follows: In the operative clause, immediately before the words "the whole right," insert the words "one undivided half part of." Omit the covenant for re-issues, retaining the covenant as to title, and, if desired, insert the joint protective condition, same as in No. 2.)

No. 5. Assignment of Partial Undivided Interest by a Party who is Himself an Assignee.

(FORM No. 4 will answer perfectly well for this purpose; but, if it is desired to set out the chain of title, the assignment may read as follows:—)

Whereas letters-patent of the United States, for improvements in *plows*, dated *July 5, 1873*, No. *126,789*, were granted to *John Smith*, who afterward assigned one undivided half part thereof to *William Williams*, of *Hartford, Conn.*, the present writer: Now, for the consideration of *one dollar*, the receipt whereof in full is hereby acknowledged, I do hereby assign to *Charles Caudle*, of *New-York City*, one undivided half part of my said interest in said patent,—to wit: one undivided fourth part of the whole patent,—to be held and enjoyed by my said assignee, his heirs and assigns, to the full end of the term of said patent.

(Insert warranty of title, as in No. 1.)

(If the assignment from *John Smith* to *William Williams* contained the joint protective condition, insert the following:—)

My said assignee to take the interest to him hereby conveyed, subject, so far as his proportionate part of the patent

is concerned, to the provisions of the following condition, which was contained in said *Smith's* assignment to me, in words as follows; to wit: —

(Here insert the joint protective condition from No. 2.)

In witness whereof, I hereto set my hand and seal as of and for the *thirty-first* day of *March*, A.D. *1874*.

William Williams. Seal

(Note. If it is desired to make an assignment extend to any possible extension of the patent, it may be done by inserting just after the words "term of said patent" the words "and any extension thereof." If the interest conveyed is subject to some prior license, mortgage, or other incumbrance, such incumbrance should be specified at the end of the covenant as to title, in words substantially as follows: "except a mortgage for *one thousand* dollars to *Charles Cady*, of *New-York City*, which said mortgage said assignee assumes and agrees to pay as a part of the consideration for this assignment.")

No. 5. Grant of a Territorial Right. By Joint Patentees.

WHEREAS letters-patent of the United States, for an *Improved Process for Macerating Flax*, No. *125,670*, dated *July 4, 1873*, were granted to *James Johnson*, inventor, and *Henry Harrison*, assignee of an undivided interest; and

Whereas, *Samuel Sanborn*, of *New Haven*, *Connecticut*, is desirous of acquiring all the rights conferred by said patent within and for the *State of Connecticut:*

Now, for the consideration of *one thousand dollars*, the receipt whereof in full is hereby acknowledged, we do hereby grant and convey to said *Sanborn* the whole right,

title, and interest in and to said letters-patent, in, to, and for the whole of the *State of Connecticut*, and in no other place or places.

(Here insert covenant as to title, as in No. 1.)

In witness whereof, we have hereto set our hands and seals, as of and for the *first* day of *April*, A.D. *1874*.

James Johnson. Seal.

Henry Harrison. Seal.

(Note. Where a machine, manufacture, or composition of matter forms the subject-matter of a patent, there should be inserted, just after the covenant as to title, a grantee's protective condition, as follows:—)

Grantee's Protective Condition.

This grant is made upon the following express condition, a willful infraction of which by said grantee, his heirs, assigns, grantees, or licensees, shall work a forfeiture to the present grantors, their heirs and assigns, of all rights and privileges under or relating to said letters-patent possessed by the person or party guilty of such infraction; to wit: Said grantee, his heirs, assigns, grantees, and licensees, shall not knowingly sell or part with any article, bearing or embodying any material part of the invention forming the subject-matter of said patent, which is to be carried, sold, or used without the territory covered by this grant, and said grantee, his heirs, assigns, grantees, and licensees, shall use their utmost endeavor to comply with the spirit of this condition, and to prevent any infraction thereof; and a gift, lease, loan, or sale of any such patented article, to a person or party whom said grantee, his heirs, assigns, grantees, or licensees, being such seller or giver, knows to have once carried, or used, or sold such patented article without the territory covered by

this grant, in violation of the spirit of this condition, shall be conclusive evidence of a willful violation of this condition on the part of such seller or giver.

(Where the patented invention is a process, the same kind of protection can be had by a condition substantially the same as last given, providing that the products of the process shall not be carried, sold, or used without the territory covered by the grant.)

No. 6. Mortgage of Patent.

FOR the consideration of *one thousand dollars*, received to my full satisfaction of *Hiram Henderson*, of *the city of Albany*, in the state of *New-York*, I do hereby assign and mortgage to the said *Henderson* the whole right and title to letters-patent of the United States, No. *26,499*, dated *July 4, 1867*, for an improvement in *harvesters*, granted to *John Johnson*, of *Hartford, Connecticut*, and by him fully assigned to me.

(Insert here covenant as to title, as in No. 1.)

The condition of this assignment and mortgage is such, that, whereas I am justly indebted to the said *Hiram Henderson* in the sum of *one thousand dollars*, as evidenced by my promissory note of even date herewith, payable to said mortgagee or order *one year from date*, with interest: now if said note shall be well and truly paid, according to its tenor, then this assignment shall be null and void, but otherwise to be of full force and effect.

In witness whereof, I have hereto set my hand and seal, as of and for the *second* day of *April*, A.D. *1874*.

Witnesses:
John Sidewell.
George Smith.

James Jansen. Seal.

State of *Connecticut*, County of *Hartford*, ss.

On this *second* day of *April*, A.D. *1874*, personally appeared *James Jansen*, by me known to be the person of that name who executed the foregoing mortgage, and acknowledged the execution of the same to be his free act and deed. Before me,

William W. Williams,
Notary Public.

No. 7. License. Shop Right.

IN consideration of *five hundred dollars*, to me in hand paid by the HEIGHO MANUFACTURING COMPANY, a corporation of *New-Jersey*, located in *the city of Trenton*, in the state of *New-Jersey*, I do hereby license and empower said *company* to make at *a single foundery and machine-shop in said Trenton*, and in no other place or places, the improvement in *harrows*, for which letters-patent of the United States, No. *29,376*, dated *July 5*, *1869*, were granted to me, and to sell the same throughout *the United States*, to the full end of the term of said patent.

And I do covenant to and with the said *company*, that I have full right and title to make this license in manner and form as above written, and that there is no prior assignment, grant, mortgage, license, or other conveyance, under or relating to said patent, that can prevent said licensee from enjoying the privileges conveyed by this license to the full extent above given and stated.

Covenant as to Title.

In witness whereof, I have hereto set my hand and seal as of and for the *second* day of *April*, A.D. *1874*.

George Garvie.

No. 8. License (Shop Right), Assignable and Limited.

IN consideration of *five hundred dollars*, to me in hand paid by *Walter Walters*, of *New-Haven*, in the County of *New-Haven*, and State of *Connecticut*, I do hereby license and empower the said *Walters*, and his assigns, to manufacture, at a single foundery and machine-shop, the improved *seed-sower*, for which letters-patent of the United States, No. *75,603*, dated *December 26, 1870*, were granted to me, to the number of five hundred in each year, to the full end of the term for which said letters-patent were granted, and to sell such *seed-sowers* throughout the *New-England States*.

(Insert here covenant as to title, the same as in No. 7.)

In witness whereof, I hereto set my hand and seal, as of and for the *second* day of *April*, A.D. *1874*.

Julius Handy. (Seal.)

No. 9. License (Not Exclusive), with Royalty.

Taken from Patent Office Forms.

THIS agreement, made this *twelfth* day of *September, 1868*, between *A. B.*, party of the first part, and *C. D. & Co.*, party of the second part, witnesseth: that whereas letters-patent of the United States for an improvement in *horse-rakes* were granted to the party of the first part, dated *October 3, 1865;* and whereas the party of the second part is desirous of manufacturing *horse-rakes* containing said patented improvement, — now, therefore, the parties have agreed as follows:

I. The party of the first part hereby licenses and empowers the party of the second part to manufacture, subject

to the conditions hereinafter named, at their factory in (———), and in no other place or places, to the end of the term for which said letters-patent were granted, *horse-rakes* containing the patented improvements, and to sell the same within the United States.

II. The party of the second part agrees to make full and true returns to the party of the first part, under oath, upon the *first* days of *July* and *January* in each year, of all *horse-rakes* containing the patented improvements manufactured by them.

III. The party of the second part agrees to pay to the party of the first part *five dollars*, as a license fee upon every *horse-rake* manufactured by said party of the second part, containing the patented improvements; provided that, if the said fee be paid upon the days provided herein for semi-annual returns, or within ten days thereafter, a discount of *fifty* per cent shall be made from said fee for prompt payment.

IV. Upon a failure of the party of the second part to make returns, or to make payment of license fees as herein provided, for thirty days after the days herein named, the party of the first part may terminate this license, by serving a written notice upon the party of the second part; but the party of the second part shall not thereby be discharged from any liability to the party of the first part for any license fees due at the time of the service of said notice.

In witness whereof, the parties above named (the said Uniontown Agricultural Works, by its president) have hereunto set their hands the day and year first above written.

A. B.
C. D. & Co.

No. 10. License (Exclusive), with Contract for Royalty.

THIS agreement, made this *tenth* day of *June, 1871*, between *George B. Matthewson*, of *Hartford, Connecticut*, party of the first part, and *The Excelsior Iron-works, a corporate body under the laws of said state, located and doing business at New-Britain, in said state*, party of the second part, witnesseth:

That whereas letters-patent of the United States, were on the *twenty-ninth* day of *January, 1871*, granted to said party of the first part, for an improvement in *stove-hooks*, which said patented article said party of the second part is desirous to make and sell; now, therefore, the parties have agreed as follows:

I. The party of the first part hereby gives to the party of the second part the exclusive right to manufacture and sell said patented improvements, to the end of the term of said patent, subject to the conditions hereinafter named.

II. The party of the second part agrees to make full and true returns, on the first days of *January, April, July*, and *October* in each year, of all of said patented *stove-hooks* made by them in the three calendar months then last past; and, if said party of the first part shall not be satisfied, in any respect, with any such return, then he shall have the right, either by himself or his attorney, to examine any and all of the books of account of said party of the second part, containing any items, charges, memoranda, or information relating to the manufacture or sale of said patented *stove-hooks*, and, upon request made, said party of the second part shall produce all such books for said examination.

III. The party of the second part agrees to pay the party of the first part *two cents* as a license fee upon every

one of said patented *stove-hooks* made by them, the whole of said license fee for each quarterly term of three months, as hereinbefore specified, to be due and payable within *fifteen days* after the regular return day for that quarter. And said party of the second part agrees to pay to the party of the first part at least *fifty dollars*, as said license fee, upon each of said quarterly terms, even though they should not make enough of said patented *stove-hooks* to amount to that sum at the regular royalty of *two cents* apiece.

IV. Said licensee shall cast or otherwise permanently place upon every such *stove-hook*, made under this license, the word "*Matthewson*," and in close relation thereto the word "Patented" and the date of said patent.

V. Said licensee shall not, during the life of this license, make or sell any article which can compete in the market with said *stove-hook*.

VI. Upon the failure of said licensee to keep each and all of the conditions of this license, said licensor may, at his option, terminate this license, and such termination shall not release said licensee from any liability due at such time to said licensor.

VII. (Insert covenant as to title, as in No. 7.)

In witness whereof, the above-named parties (*the said Excelsior Iron-works, by its President*) have hereto set their hands the day and year first above written.

George B. Matthewson.

Excelsior Iron-works,
By John Hartshorn, President.

(Note. It will be observed, that under Form No. 9, the licensee is not bound to make a single one of the patented

articles, and, if he does not, the patentee derives no profit from the license. It is not an uncommon thing for unscrupulous manufacturers, with whose business a new invention would interfere, to get a license, in substance like Form No. 9, except to make it exclusive, and perhaps leave out the vacating clause at the end, and then to either never make a single one of the patented articles, or to make so few as to make it really amount to the same thing. The license in Form No. 10 is the one that is recommended; for, under it, the licensee is bound to pay a certain sum, as royalty, whether he make a single one of the articles or not.)

No. 11. Form for Articles of Association.

ARTICLES OF ASSOCIATION OF *The Williams Patent Steam Governor Manufacturing Company.*

THE subscribers hereby associate themselves as a body corporate and politic, under and in pursuance of the provisions of the statute laws of the state of *Connecticut*, authorizing and regulating the formation of joint-stock corporations, and they adopt the following general articles of association and agreement:

I. The name of the corporation shall be *The Williams Patent Steam Governor Manufacturing Company*, and its capital stock shall be *one hundred thousand* dollars, to be divided into shares of twenty-five dollars each.

II. The purpose for which this said corporation is to be organized is *to manufacture and sell the steam-governor covered by letters-patent of the United States, dated February 29, 1871, and numbered 102,232, issued to Chauncey Williams, to sell rights under said letters-patent*, and to buy and sell

and deal generally in such real and personal estate as may be necessary and convenient in the successful prosecution of said business.

III. The principal place of business of said corporation shall be at *Hartford*, in said state.

IV. Each subscriber hereto agrees to take the number of shares in the capital stock of said corporation set against his name, to be paid for by installments, as called for by the directors hereafter to be appointed.

V. It is mutually understood and agreed by and between the subscribers hereto, that said *Chauncey Williams*, or his legal representatives, may subscribe hereto for that number of shares whose par value amounts to *twenty-five thousand* dollars, and that, when said letters-patent are fully assigned to said corporation, said *Williams* and his legal representatives shall be freed from any further liability on account thereof, which said allowance, together with *ten thousand* dollars in cash, which it is agreed and understood shall be paid to said *Williams* before said corporation shall commence to prosecute said business, shall be in full payment for said letters-patent and the invention covered thereby, which shall then become the full and exclusive property of said corporation.

Dated *Hartford, Conn., July 4, 1871.*

NAMES.	NO. OF SHARES.	PAR VALUE.

(Note. Upon such a basis as this, the inventor can proceed, till he secures the requisite subscribers, after which it is advisable to follow the advice of some local attorney, as to giving notice of the first meeting of the company, etc.)

No. 12. Power of Attorney to Sell Rights. By the Patentee.

I, *John Haight*, of *Hartford*, *Connecticut*, patentee and owner of letters-patent of the United States, No. *100,001*, for an improvement in *mouse-traps*, dated *May 25, 1870*, do hereby appoint *Hiram Handsome*, of said *Hartford*, my attorney, with full power to make assignments, grants, or licenses of any kind, under said patent, with full power to sign my name to all such instruments, and to receive and receipt for all considerations received in exchange for any of said rights, but with no power to bind me in any manner further than to make binding and legal all such assignments, grants, and licenses.

This power is in force till a revocation in writing shall be duly recorded upon the records of the United States Patent Office, where this power of attorney will be found duly recorded.

Witness my hand this *fourteenth* day of *June*, A.D. *1871*.

Witnesses:

Charles Hawser. *John Haight.*

Henry Cable.

(Note. It will be observed that the foregoing power gives to the attorney, while the power is unrevoked, as full power over the patent as the owner has, and makes no provision for insuring that the owner shall know of the terms of each sale, or for the safety of the funds received. Although it is a common form, it can not be recommended. The following is the form that is recommended: —

No. 13. Power of Attorney, with Restrictions. By the Assignees of Entire Right.

WE, *William Noble* and *Hugh Ransom*, of *Hartford*, *Connecticut*, assignees and owners of the entire right in and to letters-patent of the United States, No. *100,066*, for an improvement in *garden hoes*, dated *May 24, 1873*, do hereby appoint *Robert Roberts*, of said *Hartford*, our attorney, with full power to make assignments, grants, or licenses of any kind, under said patent, with full power to sign our names to all such instruments, and to receive and receipt for, in our name, all considerations received in exchange for any of said rights, but with no power to bind us, or either of us, further than to make binding all such assignments, grants, and licenses; he to exercise all power herein conferred under the following conditions, without which no act of his under this authority shall be valid:

I. He shall sell at not less than the following prices:

For the whole patent, *twenty thousand dollars;*

For any state, such part of *twenty thousand dollars* as the population of the state in question bears ratio to the whole population of the United States,—this result to be doubled to find the price for said state;

For any county, such part of the price for the state, as determined by the foregoing directions, as the population of the said county bears ratio to the population of the state,—this result to be doubled to find the value of said county;

For any town, such part of the price of the county in which it is situated, determined as hereinbefore directed, as the population of the town bears ratio to the population of the county,—this result to be doubled to find the value of said town.

All sales of licenses, and all territorial sales at less than the prices given above, to be subject to our approval by letter or telegram.

II. All payments for rights thus sold shall be made either in cash wholly, or in not less than one-half cash and one-half in good promissory notes, to mature within six months from day of sale, and either signed or indorsed by a person or persons of ample pecuniary responsibility. All such cash shall be deposited by the payer thereof with the nearest bank or responsible private banker, payable to the joint order of our said attorney and ourselves, and all such promissory notes shall be made in three notes of equal amount, payable to the joint order of ourselves and our said attorney, and delivered to him. Any payment aforesaid in anywise deviating from these provisions, to be subject to our approval by letter or telegram.

This power shall remain in force till a written revocation thereof shall be recorded on the records of the Patent Office of the United States, where this power will be found recorded.

Witness our hands, this *tenth* day of *June*, A.D. *1871*.

Witnesses:

Samuel Simmons. *William Noble.*

Thomas Tompkins. *Hugh Ransom.*

(The reader is, probably, not artless enough to need the suggestion, that it is well to put the stated price in the power high enough to allow the agent to fall sensibly therefrom, and yet get a fair price. There is nothing that will incite a person to buy an article so much as to think he is getting it much below its real value.)

No. 14. Private Agreement to Accompany Power of Attorney.

THIS agreement, made this *tenth* day of *June, 1874*, between *William Noble* and *Hugh Ransom*, party of the first part, and *Robert Roberts*, party of the second part, all of *Hartford, Connecticut*, witnesseth:

I. That the party of the second part agrees to use his best endeavors to sell rights under letters-patent No. *100,066*, dated *May 24, 1871*, for the party of the first part, under the terms and conditions of a power of attorney of even date herewith, from the party of the first part to the party of the second part; such endeavors to continue until said power of attorney is revoked, or until the party of the second part notifies the party of the first part, in writing, that he no longer wishes to be bound by this agreement.

II. The party of the first part agrees to pay to the party of the second part one-third part of all the proceeds from said sales, as remuneration for his services in this behalf, and this remuneration shall be due and payable from cash received, as soon as deposited as provided in said power of attorney, and from promissory notes received, as soon as the same are delivered to the party of the second part, the party of the second part to retain as his property one of the three said equal promissory notes, and to immediately forward the other two to the party of the first part. This allowance to be in full of all charges whatsoever in this behalf against the party of the first part; and the said party of the second part is to bear his own expenses, of whatever nature.

In witness whereof, the said parties have hereto set their hands this *tenth* day of *June*, A.D. *1871*.

Witnesses: *William Noble.*

Samuel Simmons. *Hugh Ransom.*

Thomas Tompkins. *Robert Roberts.*

(Both parties should have one of these agreements, which should be made in duplicate for that purpose. Of course, this agreement is for nothing but private use, and is not to be shown generally.)

No. 15. Revocation of Power of Attorney.

HAVING, on the *tenth* day of *June*, *1871*, appointed *Robert Roberts*, of *Hartford*, *Connecticut*, our attorney to sell rights under letters-patent No. *100,066*, dated *May 24*, *1871*, for us, we do hereby revoke said power of attorney to him, and declare his authority to act for us in any manner to be at an end.

Witness our hands, this *fourth* day of *July*, A.D. *1871*, at *Hartford*, *Connecticut*.

Witnesses: *William Noble.*

Samuel Simmons. *Hugh Ransom.*

Thomas Tompkins.

No. 16. Power of Attorney to Sell Rights, C.O.D.

I, *George Grant*, of *Bridgeport*, *Connecticut*, owner of letters-patent of the United States, No. *135,543*, dated *February 30*, *1873*, hereby authorize *Lucius Lewis*, of said *Bridge-*

port, to sell assignments, grants, and licenses under said patent, such sales to be approved by me before becoming valid, upon which approval, in each case, I will send the necessary assignment, grant, or license, duly executed by me, by express to said *Lewis*, accompanied with instructions to the carrier to allow said *Lewis*, and the buyer or buyers of any such right, to examine such conveyance, and upon delivery of the same, to collect for return to me such money, notes, or articles as I am to receive in consideration of such sale.

Signed and sealed by me, this *thirty-first* day of *June*, A.D. *1873*.

George Grant.

(All powers of attorney to sell rights, and all revocations thereof, should be recorded at the Patent Office, so that buyers may have full notice of a revocation, and be protected thereagainst. Notwithstanding the provision in the power of attorney that the attorney shall only sell for cash and notes, it is well to agree verbally that he may sell for real estate, subject, of course, to approval by letter or telegram; and, when this is done, the deed for the same can be made to the joint names of the owner or owners of the patent and the attorney, and the land can afterward be divided, if not satisfactorily sold for cash, allowing the attorney one-third, as in other cases. If articles of personal property,—as produce, horses, diamonds, etc.,—are offered in exchange for rights, it is best to take them, and then sell them for cash.)

(Note. An assignment, grant, or license, made by an agent, reads precisely the same as when made by his principal, but is signed with the name of the principal "by

his attorney." That is, supposing the name of the owner of the patent to be *George Case* and that of the agent to be *Samuel Smith*, the instrument would be signed:

George Case,
By his attorney, *Samuel Smith*.)

No. 17. Contract for Future Grant.

WHEREAS letters-patent of the United States, for improvements in *ox-yokes*, No. *49,695*, dated *May 6, 1869*, were issued and granted to *Isaac Johnson;* and whereas, *Henry Henderson*, of *Chicago*, *Illinois*, desires to acquire all the rights granted by said letters-patent within the *State of Illinois:* Now, in consideration of the present payment to me of *five hundred* dollars in current funds, and in further consideration of the delivery to me of three promissory notes of even date herewith for *five hundred* dollars each, made and signed by the said *Henderson*, payable to my order, one due *three months* from date, one due *six months* from date, and one due *nine months* from date, — all with interest:

I, the said *Isaac Johnson* do hereby grant to the said *Henderson*, but not to his assigns, for the term of *nine* months from the date hereof, the exclusive license to make, to use, and to vend to others to use, within said *State of Illinois*, the articles forming the subject-matter of said letters-patent; provided, that if either of the two notes, coming due at *three* and *six months* respectively, shall not be paid at maturity, then, when said default of payment is made, this license shall immediately determine, without notice or action on my part;

But, if payment of each and all of the said three notes shall be made at the time of their maturity, then, by such payment, the said *Henderson* shall become the sole owner of each and all of the privileges and rights granted and secured by said patent, within and for the whole of the *State of Illinois*, without further action on my part.

And I covenant and agree, that, when all three of said notes are fully paid at maturity, I will execute and deliver to said *Henderson* a full and complete grant and transfer of the whole interest in said patent, within and for the *State of Illinois;* and I hereby make this agreement a lien and mortgage upon said interest in said patent for the faithful performance of my contract herein contained.

(Insert here covenant of title, as in No. 1.)

In witness whereof, I hereto set my hand and seal, this *eighth* day of *June*, A.D. *1874*.

Isaac Johnson, Seal.

By *Amos Ames*, Agent.

PRACTICAL SUGGESTIONS
ON
THE SALE OF PATENTS.

Entered according to Act of Congress, in the year 1871, by
WILLIAM EDGAR SIMONDS,
in the Office of the Librarian of Congress at Washington.

PRACTICAL SUGGESTIONS

ON

THE SALE OF PATENTS.

IN GENERAL.

HAVING made a really meritorious invention, and having secured a patent thereupon, the inventor, who would sell his patent, has a delicate and often difficult task before him. All along till now, — from the first crude conception of the invention, on through its various stages of trial and experiment, till the device stands forth completed, and yet on through the ordeal of the Patent Office, till its parchment, ribbon, and seal assure the inventor of its protection, — he is usually sustained by an earnest enthusiasm. In a sort of vague way, it has, all along, seemed to him that, when his patent should issue, his labors would be done, and he would thenceforth rest on his well-earned laurels. Not that the situation has thus stood forth in his mind, clearly and sharply defined, for it rarely occurs to an inventor to seriously consider upon what will be the state of affairs at this juncture, till the progress of events brings him to it; but the cloud which hovered over this bit of promised land roughly assumed this shape.

When the inventor has finally received his patent, and read and re-read it some dozens of times, it begins to occur

to him that he will just thrust in his sickle and reap a little of the golden harvest, which imagination, has all along, been sowing for him. Plainly, he looks around for a purchaser, and with a kind of astonishment, waking up, as it were, from a dream, he finds that purchasers do not stand around ready to exchange their lucre for his invention. Generally unaccustomed to the ways of business and of business men, he finds himself, in a short time, as helpless in his endeavors as can well be imagined. He does not know what class of men will be most likely to take an interest in his invention, nor how to reach them, nor what to say to them. Not rarely, after a year or so of this blind groping, disgust with the whole thing sets in, and the inventor renounces this and all other inventions forever.

This has been the experience, over and over again, of thousands upon thousands of inventors; and, in multitudes of cases, where a purchaser has been found, the invention has been sold to him for a song, and the buyer, applying business principles to the management of the invention, has realized the lion's share of the money from it.

The Patent Office Reports are full of useful devices, which have never been introduced into the markets of trade, and which, it is easy to say, would have netted their inventors considerable sums of money, if they had been properly brought out in their time.

It is partly with the purpose of indicating to this class of inventors to whom they should present their patents for sale, and how to present them, that this work has been projected.

It must not be supposed that all inventions are salable, or that the directions hereinafter contained are infallible. Some inventions are very far from being improvements; for, though they may be very ingenious, yet they are

neither simpler, more efficient, nor cheaper than the common devices in use for the same purpose, and consequently there is no money in them. Such inventions may sometimes be sold to men with more money than good judgment; yet the cases where this can occur are so few, that it is not worth while to place any dependence upon them.

It is, however, believed that a person will rarely fail to dispose of an invention of any merit, if he takes the pains to understand and intelligently act upon the suggestions hereinafter contained.

Patentees must not be too easily discouraged in their efforts to make sales, for inventions which are really improvements have a financial value just as real as that of a farm or of any article of trade; and, in the hands of patent salesmen of skill and experience, money is realized from patents with greater rapidity than in almost any other legitimate business.

PATENT BROKERS AND PATENT SWINDLERS.

Almost, if not quite, every issue of various scientific and mechanical publications contains the advertisements of parties who hold themselves out as making a business of buying and selling patents, almost always "strictly on commission." The following, omitting names and localities, is the actual advertisement of such a party, as it appeared from week to week: —

PATENT-RIGHTS SOLD ON COMMISSION—And valuable inventions introduced, by the most experienced patent salesmen in the Union..... No charge for our services unless successful, etc.

This is a fair sample of a whole class of advertisements. A letter of inquiry, addressed to one of these advertisers, elicited the following reply: —

DEAR SIR, — Your favor of the 2d at hand. We charge from $50 to $250 for expenses of negotiating patents, and ten to fifteen per cent for commission.
Yours truly, —— ——

A letter sent to another elicited the following reply: —

DEAR SIR, — Your favor of the 7th is received. We have been so taken up with other matters, have scarcely had time to reply. Our terms require the patentee to furnish $100 with which to advertise his patent, furnish one perfect model or drawing, and allow us forty-five days within which to make the sale, etc., etc. Yours respectfully, —— ——

Similar answers were received to letters written to others of these brokers. These answers were invariably accompanied by circulars describing, in glowing terms, the advantages the senders were able to offer. There was a striking similarity among these circulars, and, in one case, two were found, parts of which were identically the same, word for word, although they issued from offices more than a thousand miles apart.

It will be observed that these patent brokers always advertise to sell *on commission*. Their letters and circulars disclose that there is always an advance fee, varying from twenty-five to two hundred and fifty dollars, which can hardly be said to be in conformity with the terms of the advertisements. Commission-houses engaged in the sale of other articles always pay their own expenses, and not infrequently advance money upon goods consigned to them, before they are sold. For a patent broker to first advertise to sell patents on commission, and then, afterward, to charge an advance fee, ought, at least, to subject him to suspicion.

Another thing: it is difficult to see what advantages a patent broker can have over the patentee, if the latter

is once made acquainted with the way to reach probable customers. The broker certainly can not understand the nature of the invention better than the inventor; and, besides, as the buyer well knows that the broker must have a large commission from the price realized, he has an incentive to buy from the inventor, and save this commission.

The broker will probably claim, —

FIRST, — That, by education and experience, he is better qualified than inventors in general, to set forth the advantages of the invention, and the profits to be derived therefrom; and,

SECOND, — That he keeps an open office, at a settled place, where a person seeking investments in patents may come, examine, and select.

To the first argument, it may be replied, that the ability to well set forth the advantages of an invention is not necessarily incident to the occupation of a patent broker; and, to the second argument, it may be replied, that the legitimate market for inventions is found among those who are engaged in manufacturing or selling articles akin to the invention on sale, and that this class of men will, as a rule, display their usual shrewdness, and much prefer to deal with the inventor at first hand, and thus save the heavy commission which they well know the broker must receive.

The sum of money which these brokers require as an advance fee will, in most cases, pay all the expense of presenting an invention to all that class of persons who will be likely to buy it, which is all that the brokers will promise to do, and the invention is, meanwhile, entirely within the control of the inventor.

These remarks are based upon the supposition that the advance fee paid to the broker is wholly and honestly

appropriated for advertising, etc., about which a person is justified in entertaining grave doubts. At any rate, it is better for the inventor to wait till he has exhausted all the unequivocal resources at command, before resorting to patent brokers who charge an advance fee.

Patent Swindlers. Inventors seem to be the favorite prey of a certain kind of swindlers. First they hail from a small town in Michigan, next from Philadelphia, then from Chicago, then from Nashville, and so on through a long and dreary catalogue. They send out circulars to inventors, describing their offices, their salesmen, and their facilities, and invite patronage, always remembering to charge a paltry advance fee of three or five dollars, and giving some specious reason for making the charge.

Advertisers of this kind are always arrant swindlers: they never make the slightest attempt to dispose of a patent. One Michigan concern kept on at this business till they had accumulated hundreds, if not thousands, of models, which they tumbled into closets, chuckling, no doubt, meanwhile, in wicked glee at the verdancy of their victims. But the law at length hunted them out.

PRELIMINARY TO UNDERTAKING SALES.

Models. It is absolutely necessary, in offering a patented invention for sale, to have one or more perfect working models. If the invention is a machine, and not too large and costly, and it is within the inventor's means,

he should construct, or have constructed, at least one full-sized machine that will work to perfection. If, beyond question, the machine is too costly to allow of the inventor's building one, then he should have, in its place, complete, artistic drawings, in elevation, plan, and detail.

In making a model, it is not enough to construct a rude device, which, in a halting and awkward way, will illustrate the principle of the improvement. The machine should be most carefully and perfectly made. The mass of minds will much more readily understand and appreciate the *principle* of the machine, if the mechanical execution is perfect. Whatever the after-made machines may be, the first one should be as near perfect as possible. The inventor will usually find that, at his best, he will have enough to apologize for, without being responsible for poor workmanship. It is much easier to interest a crowd in a fine piece of mechanism, even if the device be old, than in a new but roughly made invention. The tea, coffee, and spice merchants understand this, and take advantage of it, when they put in their windows handsome specimens of small steam-engines, which are supposed to be always grinding fragrant Mocha and old Java, the merchants well knowing that half the people who go by will take a look at the polished and painted machinery, and will thereby be drawn to look at their merchandise.

If the invention is a small article, as a shirt-stud, a mouse-trap, a toy, or a clothes-line holder, it is best for the inventor to have quite a number made, that he may send samples to those who may become interested in the invention, if it should be found desirable. If the invention is a new compound or a new process, the inventor must provide materials, etc., for explaining and illustrating the process, or the effects of the new compound.

First Cost. Another necessity, in offering a patent for sale, is to be able to show just what the first cost of the article is. If the invention is some complicated and costly machine, the inventor must show, either from his own knowledge or the calculations of some competent person, what is its first cost. A competent person would be a civil or mechanical engineer, or a machinist or other mechanic of experience in constructing other machines of the same general nature. If a responsible party can be found, who will agree to furnish the machine well made for some certain sum apiece, this is an important item to be had.

If the invention is some small device, and not costly, the inventor should have some dozens (or, better still, a few hundreds) of them made, so as to get at the exact first cost. To find a responsible party who will undertake to make the articles for a certain sum per hundred, per gross, or per thousand, is also important here. The difference of two or three cents in the first cost of small articles of general use, often determines who shall command the market; in other words, who shall make money from the manufacture, and who shall lose.

If the invention is a new process, the inventor must be amply prepared to show the cost of his process, as compared with that in common use for the same or similar purposes.

The Profit. The profit made on a single article is, of course, the difference between the first cost and the retail price at which it is finally sold to the consumer. To determine the amount of this profit upon a new invention, is a necessary thing, before offering it for sale. The whole profit is divided into three and sometimes four parts; to wit: the manufacturer's profit, the wholesale dealer's profit, and the retail dealer's profit. The manufacturer sells to the

wholesale dealer, the wholesale dealer to the retail dealer, and he to the consumer. There is, sometimes, intermediate between the manufacturer and wholesale dealer, the jobber; but the writer fails to see the use of such an intermediate, and, if he is made use of, his profit should be a percentage on the profit of the manufacturer, — so that, in making the division of profits, it is not necessary to consider the jobber at all. The retail price of the article should be fixed as low as is commensurate with the allowance of fair profits to each of these parties. If the invention is an improvement upon an article in common use, — as, for instance, a flat-iron, — and the first cost of the article is not greater than the first cost of the common article, then it is probably best to adopt just the scale of profits which obtains in the trade with regard to the common article. An inquiry put to a friendly dealer in the articles upon which the invention is an improvement, will elicit what these profits are. If the first cost is somewhat greater, then the retail price should be correspondingly advanced, the scale of profits being kept at about the same ratio of correspondence. If the first cost is less than that of the common article, it is probably advisable to keep the retail price up to that of the common article, and thus give larger profits.

There is no general correspondence of profits to these three parties, on different articles. The profits on different manufactures differ widely, and with no reference whatever to a common standard. The only rule that can be given, in this regard, is, to ascertain the scale of prices and profits which prevail from the manufacturer to the consumer, in the trade, upon articles which are nearest like the invention under consideration, and then to assimilate, as far as possible, the profits upon the new article to this scale, varying, however, as any good reason may dictate. If the invention

is a new process, the inventor must be prepared to show the gain in using the new process, as compared with the old, and the increased profit secured thereby. The same is true, if the invention is a new machine for producing an old article, as, for instance, drain-tile.

The Market. Having ascertained the first cost of producing the article invented, and having fixed upon the profit to be derived from a single article, the next step is to inquire how extensive a market is offered to the invention. If it is an invention useful to both sexes, to children and adults alike, it will have for a market the whole population of the United States, — over thirty-eight millions of souls. If useful to adult males only, the market will be about one-fourth of this number. This thirty-eight millions of population is composed, roughly, of males and females in about equal proportions, and each of these divisions is composed of about one-half adults and one-half children; so that, if the invention appeals to persons irrespective of their avocations, the market for it is readily computed. If the invention is one which will be useful in every family, the market will be about one-fifth the whole number of souls, as, on an average, there are about five persons in a family.

The full census report for 1870 contains such full statistics of the different trades, professions, and callings of the people of the United States, that there can be readily gathered from it how many there are of any class or classes of persons to whom an invention may be of particular utility, and the whole of such class or classes will constitute the market for the invention.

Instead of being directly useful to any class of persons, an invention may be an improvement in the manufacture of some article, — as flour-barrels, for instance, — and then

it is necessary to ascertain the actual annual production of this article in the country; or, it may be an improved process, say of smelting iron, and then it is necessary to find how many tons of iron are annually smelted. The census of 1870 is a great aid in ascertaining most, if not all, of this information; but, when it is deficient, the librarian of almost any public library can direct an inventor where to find the desired statistics. The wants which inventions are designed to fill are so various, and the statistics which would answer all such inquiries fill so many pages, that it is impracticable to more than direct, in this book, as to what information is needed.

One element which must be taken into account in determining the extent of the market for a new invention, if it is an article and not a process, is its durability. If the article, when once sold to the consumer, will last him for ten years, of course the market for that article is not so large as it would be, if, in the natural course of things, it would last but a short time, and then would require to be renewed. Having ascertained the extent of the market for a new invention, the gross profit to be derived from it can be readily computed, by multiplying the profit upon a single article by the whole number which may probably be sold.

Capital Required. If the amount of capital required to develop an invention, and introduce it to the public, is small, this will be an additional argument to use in selling.

Price to be Asked. This is a matter, for determining which no absolute and definite rule can be given. It is pretty safe to say, that inventors are rather apt to overestimate than underestimate the value of their inventions. Of course, the more profit there is to be made from an

invention, and the larger market there is for it, the more valuable it is. If it appeals to but a small and widely dispersed class, its value will be less. If it is a new and radical improvement in the manufacture of some staple article, as iron or steel, like the Bessemer process, for instance, a half-million dollars would be a moderate price for it; if a meritorious improvement on some household article in general use, or some article of dress, or a new and amusing toy, a few thousands might be a fair price. Again, if a really valuable improvement in some important agricultural implement, as a reaper or mower, from twenty to fifty thousand dollars would probably not be exorbitant. In no case can an inventor expect to get but a fraction of the value of his invention, as shown by the gross profit to be derived from it; for he must be able to offer the lion's share of this profit to the purchaser, as an inducement to buy; and, besides, the purchaser will have the trouble and risk of making this profit piecemeal, as it were, from the actual use and sale of the invention. The advice of friends who are in business, especially if their business is such as to make them conversant with the market for the device under consideration, will be of great value in fixing the asking price for a patent. Having fixed upon the asking price, it is then quite safe to lessen it by at least one-fourth of its amount, and on this basis proceed.

Value of Territorial Rights. Having fixed upon the gross sum to be asked for the whole of a patent, it is very easy to determine the value of territorial rights under the same. If the whole value of a patent is ten thousand dollars, a state right will be worth just such a part of the whole as its population bears ratio to the population of the whole country. Take, for instance, the State of Connecti-

cut: its population is about five hundred and forty thousand, while the whole population of the United States is about thirty-eight millions. The value of the right for this state will be arithmetically expressed thus:

$$\frac{540000}{38000000} \times \$10{,}000 = \$142;$$

or, not to put too fine a point upon it, one hundred and fifty dollars. But the inventor can not afford to sell one state at the same rate that he would sell all the states in a lump. The price for a single state should be double, or even treble, the exact proportion which the one state bears to all the states together; so that the price of the State of Connecticut would be three hundred dollars, or, if trebled, four hundred and fifty dollars. This rule, however, should not be stringently applied to any of the Gulf States, nor to any state west of Missouri, except California, for the reason that these excepted states are not as much interested in manufacturing as are their sister states, and, for some other reasons, do not offer as good markets.

An advance of fifty per cent over the value, as determined by the population, is enough to put upon these excepted states. No advance whatever, over this value, should be asked for territories. Having ascertained the value of a state in this manner, the value of a single county can be determined in precisely the same way, — first finding the value as determined by the ratio the population of the county bears to the population of the whole state, and then doubling the sum. The value of a town may be determined in precisely the same way from the value of a county. The census of the United States, taken in 1870, by states and counties, will be found further along. Those who desire to sell rights for towns, will have to procure the more extended census report for this purpose.

Shop Rights. A "shop right," so called, is the right to use the patent or to manufacture under it, at some shop or manufactory; it may be restricted to a certain place, or left unrestricted. It can not be considered advisable to make sales of this kind under a patent, unless there are strong reasons why the territory should not be sold. As such a right, when no royalty is reserved, is liable to abuse, it is very difficult to fix upon the value of it; for, although a factory may have been doing but a small business previous to the purchase of the shop right, the factory may thereafter expand its business, so as to practically interfere with sales under the patent in all parts of the country.

A shop right should be limited to a certain annual production and to a certain place. If this is not done, an effort should be made to ascertain the annual production of the factory to which the sale is to be made, as compared with the like product of the whole country; and then a proportionate price should be fixed upon the shop right, doubling the value as shown by the computation, in the same manner as was directed for fixing the value of state rights. There are some kinds of patents under which it may be advisable to sell shop rights, — as, for instance, an improvement in the manufacture of steel. The greater part of all the establishments for making steel will be found congregated in three or four manufacturing centers, and the proper and sensible way of making such a patent available to them, is to sell them each a shop right. It is not difficult, in such cases, to ascertain the amount of the annual production of each establishment, and this amount, as compared with the whole annual production of the whole country, will furnish the basis for computing the value of the shop right, provided, of course, that the gross price for the whole patent has already been fixed upon.

Royalties. A royalty is a duty paid by one who uses the patent of another, at a certain rate for each article or quantity manufactured, or a percentage upon the sales. This method of realizing from a patent is, perhaps, the commonest of any; and, if the patent is a valuable one, and the party who manufactures the article acts in good faith, it is generally the most profitable for the patentee in the long run. On the other hand, if the patent is of doubtful merit, the patentee better sell it outright, and it will be best in any case, if a fair price can be realized, for both parties to the negotiation will then be freed from any danger of injury happening to them from the bad faith of the other party.

The royalty to be asked, where a patent is let out in this way, differs very much with the article which is the subject of the patent. If the patent is an improvement upon an article of staple manufacture, it is best to keep the retail price as low as possible; and, to effect this, the royalty must be low, varying from three to five per cent of the amount of the sales. On large and heavy machinery, from five to eight per cent of the selling price is, perhaps, a fair charge. On agricultural machinery, from six to nine would not be unreasonable. On small articles of jewelry, fancy articles, toys, dress, etc., a royalty amounting to ten per cent of the gross sales is not too much. In any case, it is not best to leave the manufacturer free to make as many or as few as he chooses of the article; for he may choose to make none, and then the patentee will get nothing, and the manufacturer will still retain his license. All agreements upon royalty should contain a clause, that if a manufacturer shall not pay royalty upon a certain minimum number, the patentee shall have the option of declaring the license null and void.

Forms of this kind will be found in that part of this volume devoted to Forms. All such agreements should also contain a condition, that, at stated times, the manufacturer shall render to the patentee a true and exact account of all the patented articles made and sold by him since the last account and payment, to which account the patentee shall have the right to require the oath of the manufacturer, and that, if then the patentee is not satisfied, he shall have the right to view the manufacturer's books. The licensee should agree to make no competing article, and also to stamp the date of the patent upon each article.

If one manufacturer will undertake to supply the whole market, and will fix the minimum royalty which he must pay sufficiently high, then it is best to let him have the sole right to manufacture; but, if it becomes necessary to let the patent out to more than one, then the minimum amount of royalty should be fixed upon the same general principle as followed in determining the value of a shop right.

METHODS OF SALE.

By Circular. Having settled preliminary matters, and having become acquainted with the nature of the various kinds of rights which it is usual to dispose of under patents, the next question to be answered is, What class of persons will be the most likely to buy the patent, or rights under it? To this the answer is plain. It is likely to be most readily sold to some one of that class of manufacturers who are making articles of the same class as this. How to get the names and addresses of all of such a class? Answer: there are men, in New-York and other large cities, who make it

their business to furnish, for a consideration, full and complete lists of all parties engaged in any particular trade, occupation, profession, or manufacture, throughout the country. The inventor has, let us suppose, devised a new and useful article of jewelry for gentlemen, — say a shirt-stud or sleeve-button. He, of course, will naturally expect to sell his patent to some manufacturing jeweler, and accordingly he will procure, from one of these agents referred to, a list of all such parties, either in some particular part of the country, or in the whole country. It is not generally advisable to procure more than a partial list at first, because a sale may be made to one of these, and, if not, then the list can be readily enlarged, from time to time, as may become desirable.

Having procured such a list of parties, the next thing is to properly present the thing to them, one by one, and for this purpose it is advisable to prepare a circular, bearing a good "cut" of the invention, if it be susceptible of such illustration, and containing a concise but very careful description of the invention and its operation, setting forth its advantages over the common article or process on which it is an improvement. It should contain a careful statement of the actual first cost of the article or process, supported by facts and figures, and offers of responsible parties, if any have been made, to manufacture at such prices. It should also show what a reasonable retail price would be, as governed by the margins which obtain in the trade for similar articles, and from this deduce the profit to be made on a single specimen. It should further show, by actual statistics, taken from reliable sources, how extensive a market is offered to the invention, taking into account the average life of the article and the whole duration of the patent, and from this should be computed the whole

sum to be realized, if the whole market is supplied. This figure will always be a large one; and, after making this computation, it is advisable to say, in substance, as follows: "Even if but one-half or one-fourth of the whole market is actually supplied, the gross profit will be," etc., etc.; which, being a reasonable supposition, can hardly fail to carry weight. If the claim in the patent is a strong one, it is best to insert it in the circular, and call attention to its strength.

It is, probably, not best to put into the circular the terms upon which the patent, or rights under it, will be sold. That can be better set forth in a letter to accompany the circular. The following circular, founded upon an imaginary "Improved Collar Stud," will illustrate the general method to be followed in preparing such a circular: —

IMPROVED COLLAR STUD.

LETTERS-PATENT No. 100,010.

DATED JUNE 16, 1871.

THIS is an indispensable article of a gentleman's toilet. It is not only a perfect collar-stud, but an equally perfect tie-holder. All who have ever worn a "snap" or butterfly tie—and this comprises all American *man*kind—are well aware of the vexations incident to fastening the loop of these ties over the common shirt-button or collar-stud. Many a hasty, if not profane, ejaculation has been the result of attempting this task. It has often been a matter of equal disgust for a gentleman—a wearer of one of these ties—on reaching home, to find that he has been bravely marching through the streets, minus a neck-tie, which has, in an unlucky moment, escaped the faithless grasp of the common button or stud.

This little device completely cures these troubles. The loop of a tie is as readily slipped into one of the little hooks, upon the front of the stud, as a hat is hung on a nail, and it can not escape therefrom by accident.

The owner of the patent, which has a broad and strong claim, is not in circumstances which will allow him to undertake the introduction and sale of the studs. He will, therefore, dispose of the patent, or rights under it, and asks attention to the following remarks, which show its great value.

FIRST COST. It is made of gold-plated sheet-metal, commonly known among manufacturing jewelers as "stock plate," and all the parts are struck up by dies, so that it can be made very cheaply, at a cost not exceeding five

cents apiece. Messrs. Brazos & Copperman, of Waterbury, Conn., and also Mr. Charles Ringman, of North Attleboro, Mass., have offered to make them, in quantities, at that price. Of course, if these parties can furnish the studs at that price, the real cost is less; for manufacturers do not generally carry on their business for fun or philanthropy.

THE RETAIL PRICE. Plated collar-studs, of the common kinds, sell at retail prices varying all the way from twenty-five cents to one dollar, according to plate and workmanship. No stud, which is as well plated as this, sells for less than fifty cents, and as these last are merely the common kind, with no improvements, fifty cents would be a reasonable retail price for this improved stud, giving, as the profit on a single article, forty-five cents. This allows the manufacturer to sell to the jobber for ten cents apiece, a profit of one hundred per cent; the jobber to the wholesale dealer for fifteen cents, a profit of fifty per cent; the wholesale dealer to the retailer at twenty-five cents, a profit of sixty-six and two-thirds per cent; and the retail dealer to the consumer at fifty cents, a profit of one hundred per cent; so that while the retail price is not higher than for the common article, the profits of all concerned are enormous, and will make it a favorite with the trade.

THE MARKET. Of the 38,000,000 of people in the United States, about one-fourth (9,500,009) are men, and about one-half of these (4,750,000) are male youth, the whole mass of whom wear ties, three-fourths of them (3,562,500) "snap" ties. One of these studs can be sold to at least one-fourth of this last number, which makes 890,625, on which the owner's profit, at five cents apiece, amounts to $44,531.25; and, as the average life of a stud is about two years, this sum must be multiplied by eight to give whole profit for the seventeen years' duration of the patent, which gives the comfortable product of $356,250.

The CAPITAL REQUIRED is very small, and can be rapidly turned over.

For TERMS, etc., address

GILES GENIUS,
Hartford, Conn.

This circular should be printed in good taste. If the inventor can afford to put it on heavy, tinted paper, in some fashionable type, as is the so-called "modern old-style" at present, so much the better. The matter of the circular should be written in as clear, crisp, and sparkling style as the nature of the subject will admit, and the composition and press-work should be as perfect as possible.

If the inventor himself is not capable of doing justice to the subject, let him find some literary friend, or some other properly educated person, to do it for him. Let the statements be just as strong as the facts will bear. It will

be observed that the terms are not given in this circular. This, with some other matters, can better be reserved for a written letter, to accompany the circular. It is advisable to accompany this circular with a written letter, for the reason that the receiver thereof will be obliged, in common courtesy, to give the matter attention enough to understand it, which attention he might not give to a mere circular. Besides, the letter makes the matter more of a personal thing to the receiver, and does not make the terms public; all of which tends to give weight to the matter. The general style may be understood from the following form for such a letter: —

[LETTER.]

HARTFORD, CONN., January 1, 1871.

MR. HIRAM HAUTBOY:

Dear Sir,—May I ask your careful attention to the inclosed circular? I believe that the facts set forth therein will show you that I offer for sale a really valuable invention. The figures, making every possible allowance, and then dividing this by a large fraction, show that there is a fortune in this little thing. But I am in no condition to undertake the introduction of the article.

In the first place, I have no means.

In the next place, I am a mechanic, and ignorant of business ways and business men.

You are in a business which will enable you to manufacture and introduce this stud readily.

I offer you the whole patent for $3,000. I shall be satisfied to take part cash, and part approved notes. If you do not care to purchase the whole patent, I may be willing to sell you a territorial or shop right, or allow you to manufacture on a royalty.

Very respectfully,

GILES GENIUS.

This circular and letter (if any) should be sent to the different parties mentioned in the list. When an answer is received looking toward negotiation, if any definite terms are offered, the inventor should most carefully consider upon it, before rejecting, even if greatly under the price

asked, remembering always that all that is made over and above the actual expenses incurred, is clear profit. If a shop right, territorial right, or royalty right is wanted, the suggestions in the foregoing pages, on fixing the value of such rights, will be found of assistance.

If it is thought that better terms can be obtained, it is best to inform the correspondent that the inventor is "greatly obliged for the kind offer made, and will take it into serious consideration," etc., etc. A rule which should be imperative in all business matters, comes into play here. Never be rude or peremptory in declining an offer, but always express yourself in the kindest and pleasantest terms of which you are master.

It is hardly possible that an inventor of any merit can run the gauntlet, in this manner, of all the manufacturers in the country, whose business is of a kind to naturally interest them in the invention, without finding a purchaser.

Newspaper Advertising. Another method of getting an invention before the public is through the medium of newspaper advertising. This is more expensive than the method just described, and is not, perhaps, advisable till that fails, though it may be often happily used in conjunction with it. If the inventor can afford it, it is well to have the invention illustrated and described in one or more of the scientific and mechanical publications of the day, of which *The Scientific American* and *The American Artisan*, of New-York, and *The Scientific Press*, of San Francisco, are notable examples. Such illustration and description may sometimes, of itself, prove sufficient. If not, it may be followed up by ordinary advertising; or, this illustration and description may be dispensed with, and the advertising confined to the regular advertising

columns. In doing this, the advertisement should be inserted in the paper or papers which are designed to meet the eye of the class or classes of persons to whom the invention is of special interest. Any reliable advertising agent will be pleased, on request, to furnish, free of charge, a list of any required size, extending over the whole country or any part thereof, which circulate among any special class of people, and the advertisement of the invention should be inserted in one or more such papers, as the judgment and means of the inventor may dictate. It is very much better to insert a small advertisement in a large number of papers, than to occupy a large space in a smaller number. The experience of old advertisers confirms this proposition. If the inventor is not skilled in writing advertisements, it will be best for him, if possible, to get some properly skilled person to write the advertisement for him; for it is no common accomplishment to be able to put into a small space, in an attractive and striking and yet not vulgar manner, a notice of any thing, which shall say just enough to induce the reader to push further inquiries. Suppose the invention to be an improvement in the manufacture of coach varnish: an advertisement something like the following would not be inappropriate: —

A NEW COACH VARNISH.—A most valuable patented improvement in COACH VARNISH is offered for sale; thoroughly tried and tested. Address T. W. COPAL, Huyshope, Conn.

This will occupy but few lines of space, and yet tells enough to interest varnish and coach men therein. It is not advisable to make much parade of the patent *as a patent*, for there is something of a prejudice among business men generally against patents, on account of the great number of humbugs which have been pushed into notice

under their guise; but this prejudice vanishes, when they discover that the patent covers a real improvement.

The proper papers in which to insert an advertisement like the above, would be those which are intended for circulation among varnish users, varnish manufacturers, and carriage builders, a list of which, with the charge for insertion, the advertising agents can readily furnish. When answers to advertisements are received, they can be replied to by such a circular as that hereinbefore described, accompanied by a letter substantially like that set forth, changed to meet the requirements of the case.

The inventor must not be afraid, if his means permit, to continue his advertising for some little time; for experience has shown, that, unless a person is more than ordinarily interested in the matter advertised, he has to see an advertisement a number of times before he will take any active step in reference to it.

Personal Solicitation. Patents are frequently sold by personal solicitation, and, if the inventor cares to make the sale of rights under his patent his main business, and can get safely through the period of rawness which always attends the commencement stage of all such attempts, without giving up the business in disgust, this method of sale may prove, in the end, the most remunerative. The inventor must, however, give his whole time to the business, must have means sufficient to allow him to travel, and must persevere till he learns not to be discouraged at any and all disheartening obstacles he may encounter. In short, he must make of himself a successful salesman, and a salesman of rather a rare order, a task which is evidently so difficult, that, unless an inventor is satisfied he has peculiar qualifications for it, he better not undertake it. If he

does, however, see fit to undertake it, a few suggestions may be of assistance. Upon arriving at a town where he proposes to make a sale, he should be provided with a good model or models, and plenty of circulars containing substantially the matter set forth in the circular hereinbefore described, making the closing part to read: "Rights for sale on the most liberal terms at" (wherever the inventor has his head-quarters). If the place boasts a newspaper, the matter should be duly advertised, and a good "local" notice will be found a great help. Suppose the invention to be a new domestic article, as a knife-sharpener, the advertisement might be in substance as follows: —

A GREAT WANT FILLED.—A simple, cheap and effective article for use in every household. Great Profits made. Rights under the patent for sale low. Call at —— —— HARVEY HANDY, Patentee.

Of course, having interested a man enough to call, the inventor must press upon him, by aid of model, facts and figures, etc., the money there is in it for the purchaser. If any resident of the right stamp can be made to assist, by giving him a commission on sales, it will prove a valuable help. A thing sometimes done by traveling salesmen of patents is, to find some resident who is "up to snuff," as the saying is, and arrange with him that he shall hold himself out as ready to buy a half-interest in the territory which it is proposed to sell, and they two, — the salesman and the decoy-duck, — go in search of some third party who will really buy the other half. The price of the territory is put at double that which the seller really means to realize, and, when the third party is found, to really buy the other half of the right, the territory is assigned to the decoy-duck and such party jointly; but no money is paid, except by the third party, and out of this the seller usually

pays a commission to the decoy-duck. The fact that a neighbor is ready to purchase a half-interest in the right, is usually a great inducement to the third party to buy the other half. The difference between a transaction of this kind and a swindle is so small, that a judge or jury would not be apt to perceive it.

If the inventor chooses to take his model in his hand, and attack parties most likely to become interested, at their places of business, he may make sales; but, in this case, he will find that previous advertising will pave the way for personal effort.

Itinerant Agents. In almost every county in the United States may be found persons who, off and on, as the phrase is, make it their business to sell patent-rights, traveling about the while for that purpose. It must, in truth, be said that some of these, by their fraudulent practices, have done much toward bringing the business of a traveling salesman of patents into disrepute. These fraudulent practices have consisted in making grossly false representations, as to the first cost of their articles; in taking notes for the whole or part of the consideration of the sales, under the promise to retain them till due, so that the purchaser should have a chance to see that their representations were true before making final payment, and then selling the notes instanter; and the like. Many of these men, — the honest ones, — are really good agents to employ, as they are usually willing to bear their own expenses, and take a share of the proceeds of the sales for their pay. If an inventor has a choice among different ones, he should, other things being equal, select the one who has means that make him pecuniarily responsible. Unless a person has such means, or unless the inventor is satisfied that he is

a man of the firmest integrity, it can not be considered safe to give him an unlimited power of attorney to make sales; nor even then is it desirable, because it is always best to make sure that the agent can not keep from the inventor any of the funds he may receive, nor put the patent into the hands of a confederate by means of a bogus sale.

Control over the funds received can be kept, by providing, in the power of attorney, that all cash received shall be deposited to the joint order of the agent and the inventor, and that all notes taken shall be to their joint order. Control over unadvisable or fraudulent sales can be kept by providing, in the power, that the sales made are conclusive, unless the inventor shall, within say ten days, signify his non-acceptance thereof.

Forms for powers of attorney, with these or equivalent provisions, will be found in that part of the book devoted to Forms.

Stock Companies. A great many patents upon inventions are realized from by making them the property of stock companies, which are either specially chartered by the state or national legislature, or are organized under the joint-stock laws which prevail in most if not all the states. This is a perfectly legitimate and often a very easy way of realizing money from an invention.

The inventor takes his pay either wholly in cash, or from stock in the company, or partly in cash and partly in stock.

The *modus operandi* is as follows: The inventor, let us say, wishes to realize $10,000 in cash and $10,000 in stock, and it is necessary to have $15,000 actual cash capital to work the patent. In such a case, the nominal capital of the company may generally well be put at $100,000.

We will, first of all, reserve $15,000 of this nominal capital to be used in securing the aid and countenance of influential men, to be given away by the inventor for this purpose, though, of course, this part of the operation is usually confidential between the inventor and those whose aid he seeks. The inventor must therefore reserve for himself in all $25,000 of the nominal stock. This leaves $75,000 in stock to be sold, whereby to realize $25,000 in cash,—$10,000 for the inventor and $15,000 for actual cash capital.

Now, to raise $25,000 cash upon $75,000 nominal capital, each share sold needs to pay but one-third of its nominal value, so that there is a great inducement in this for parties to invest in the stock. Of course, to make this operation successful, the inventor must be able to show, by facts and figures, a good prospect of paying from six to ten per cent dividends upon the nominal capital; and, if he is able to do this, and acts with a fair amount of shrewdness in securing the help of two or three influential men, by the aid of the $15,000 in stock which he has set aside for this purpose, his task is very easy.

The inducements he may hold out to investors are not only the hope of gain from dividends, but the prospect of becoming officers of the company, as president, secretary, treasurer, director, etc. When such companies are organized, it is very common for the company to retain the services of the inventor in some capacity, so that the inventor is well rewarded by present cash, by stock, and by future employment.

If the inventor is content to take his pay entirely in stock, then his task is just so much the easier; and, if he is able to organize his company without giving away stock, this again lightens his burden.

If the inventor is willing to put in his invention against say $10,000 actual cash capital, then he may be able to find two or three men, or possibly one man, who will put the cash against the invention; and, in short, there are numberless ways in which this programme may be varied to meet the circumstances of each particular case.

The details of the organization of such companies must, of course, be perfected under the direction of some competent lawyer, who will see that the local laws governing such matters are duly complied with; but in the part of this book devoted to Forms, there will be found a form for articles of association of this kind, such as is in use under the laws of the State of Connecticut, which laws are substantially the same as those of other states upon the same subject.

FOREIGN PATENTS.

SYNOPSIS OF LAWS AND OTHER DATA.

THE following items of information are given for the benefit of those who may have in contemplation the procurement of foreign patents: —

Canada. The Dominion of Canada comprises the provinces of Ontario, Quebec, Nova Scotia, New Brunswick, British Columbia, and Manitoba. The population, as given by the latest census, is 3,537,887, and the area of the country 622,990 square miles. By a patent act, taking effect September 1, 1872, foreign inventors are permitted to take patents for five, ten, or fifteen years, as the applicant may elect. Patents granted for five or ten years can be readily extended for the full term. The law provides for caveats, disclaimers, assignments, and re-issues. The Government fee for a patent for five years is $20 gold, for ten years $40, and for fifteen years $60. A Canadian patent expires at earliest date at which any foreign patent for the same invention expires. An invention, to be patentable, must not have been in public use or on sale in Canada, with the consent and allowance of the inventor for more than one year prior to the application, and it must not have been patented elsewhere more than a year prior to the application.

A patentee must, within two years from date of patent, commence and thereafter continuously carry on, in Canada, the construction or manufacture of the patented thing, and he must not after one year from and after the date of the patent import the patented device from another country. In other respects the Canadian patent law is much like the law of the United States. Canada is a moderately good and rapidly improving field for inventors. The usual charge of American solicitors for Canadian patents for five years is from $65 to $75 gold, including Government fees and all other charges, for a patent for ten years $85 to $100, and for a patent for fifteen years from $105 to $120. A model, within eighteen inches square, required. There is no examination made as to novelty; patent issues as a matter of course.

Great Britain. A patent from the crown only covers England, Ireland, Scotland, Wales, the Channel Islands, and the Isle of Wight, it does not extend to any of the colonies. The population, by census taken in 1871, is 31,187,108, and the area 122,511 British square miles. This is the greatest manufacturing country in the world. Almost all of the prominent American inventions, as hard rubber, the sewing-machine, and Pullman cars, have been successfully introduced there, and a really good American invention can always be handsomely disposed of there. The British law allows no publicity of the invention within the realm by use or publication prior to application, and patents are granted to the first comer whether the real inventor or not, the first introducer being held to be the first inventor within the realm.

No examination is made as to novelty or utility, and the patent issues as a matter of course, unless some private per-

son enters an opposition and shows good reason why a patent should not be granted, which thing rarely happens. The duration of the patent is fourteen years, but expires with foreign patent for the same thing expiring previously.

The Government fees are £25 sterling all told, or about $125 gold, which can be paid in two installments. No model required. The patent must be produced at the Patent Office at the end of the third year and a duty of £50 or about $250 paid, and there is a similar duty at the end of the seventh year of £100 or about $500. There is no limit within which manufacture under the patent must be commenced, and no restriction on the importation of the patented article by the patentee.

The legal status of patents in Great Britain is substantially the same as in the United States. The usual charge of solicitors for these patents is, including all charges, from $300 to $350 gold. The British patent reports are splendid books, the binding alone of all the volumes now issued, some hundreds in number, costing some thousands of dollars. There are some six or seven sets in the United States. The Astor Library of New York city and the Patent Office at Washington each have a set.

France. The population, by census of 1871, is 36,583,559, and the area 203,738 square miles. Medicines and chemical compounds are not patentable. The duration of the patent is fifteen years, but expires with any previous foreign patent on the same thing expiring previously. The grant is valid only to the inventor, but if another person procures the patent, only the inventor can dispossess him. No examination as to novelty or utility, and the patent issues as a matter of course. No publicity of the invention in France permitted prior to application.

Actual working of the invention abroad prior to the French application renders the patent void. It is yet a mooted question what other previous foreign publicity will render a French patent void. No model required. Government fee for patent 100 francs, or about $20. There is a yearly tax of $20. Patents of addition—improvements on the original—Government fee, 20 francs, or about $5. The patent must be "worked" within two years from date of patent and must not cease for two consecutive years. Importations of the patented thing by the patentee not permitted. France carries its manufactures, especially of metals and textile fabrics, to a high state of perfection, and real improvements are quickly appreciated. The usual fees of solicitors for a patent, including all charges, is about $125.

Belgium. Population, by census of 1866, 4,839,094; area, 11,366 Briitsh square miles. Duration of patent, twenty years, but expires with previous foreign patent expiring previously; so that this application, if made at all, should be made before other applications. Patent valid only to inventor or his assigns. Invention must not have received, prior to application in Belgium or elsewhere, publicity sufficient to enable it to be put in practice. Patents of addition allowed, the same as in France. The Government fee upon the grant is a tax of ten francs, or about $2, and the taxes increase regularly each year,—$4 for the second year, $6 for the third, and so on. There is no examination as to novelty or utility, and the patent issues as a matter of course. No model required. Patents can be extended for good and substantial reasons. The patent must be worked within one year from the time that it is commercially worked elsewhere, and the working must

not thereafter cease for one year. Importation of the patented article by patentee permitted. The publication of a patent in an official patent report prior to the Belgian application, is no bar to a Belgian patent. Usual charge of solicitors for Belgian patent, including all charges, $100.

Prussia. Population, by census of 1867, 24,043,902; area, 135,778 square miles. Patent granted to first applicant, whether inventor or not. Foreigners must apply through a Prussian subject. Duration, at the pleasure of the Government, from six months to fifteen years,—usually six years. Applications are submitted to a very severe examination by a special commission of professors in the Royal Polytechnic College at Berlin, and it very rarely happens that objections more or less serious, and oftentimes frivolous, are not made. Models are sometimes required, and always in sewing-machine cases. Six months only is usually allowed for commencing the working of the patent, and it must not cease for a whole year. Importation of the patented article by the patentee is generally tolerated by the Government, but not always. The invention must not have been published or worked anywhere prior to application. There are no special taxes on patents; but the applicant must pay for stamping and registration of the papers, amounting generally to about $15, and he may have to pay other charges, sometimes borne by the Government, amounting to about $98. Usual charge of solicitor, including all charges, from $150 upward.

Austria and Hungary. Population, by census of 1870, 35,943,592; area, 241,123 British square miles. Patents granted only to inventors or their assigns, native

or foreign; not granted to foreign inventor after the expiration of his foreign patent on same thing. Medicines, foods, and chemical compounds not patentable. No examination as to novelty or utility. Models not required. Must not have been worked in the empire or described in a printed publication. Duration of patent, from one to fifteen years, at the option of the applicant; patents granted for less than the full term can be extended readily from time to time, till the whole fifteen years have been occupied. The tax for a patent for one year is $10, two years $20, three years $30, four years $40, five years $50, six years $65, seven years $82.50, eight years $102.50, nine years $125, ten years $150, eleven years $180, twelve years $215, thirteen years $255, fourteen years $300, fifteen years $350. As the taxes for the whole term of a patent have to be paid in advance, the advisable method is to take a patent for one year and then extend it from year to year. Must be worked within a year. An interregnum of two years in the working destroys the patent. Importation of the patented thing by the patentee generally tolerated, but the law gives no such right. Since the Vienna Exposition, American inventions are well appreciated; but the courts seem to fail in desire to do justice to foreign patentees. A proper charge of a solicitor for an Austrian patent for one year, including all expenses, is $150 gold, and a proper charge for any additional number of years can be ascertained by adding the Government tax for such number of years to the $150. A proper charge for the prolongation from year to year, exclusive of the Government tax, is $15 gold; $500 gold pays for a patent for the full term. Separate patents for Austria and Hungary can be had, but there would seem to be no propriety in it.

Russia. Population, in 1864, 77,269,858; area, 2,266,-983 British square miles. Patents of invention granted to natives or foreigners for three, five, or ten years, as asked for. Patents of importation are granted for six years, but may be prolonged to ten if granted to inventor. The invention must be new in Russia, and not published in detail elsewhere. Something of an examination is made, by the Council of Manufactures, as to novelty, but not a severe one. No model required. If patent is refused, which rarely happens, part of the fee is returned. No yearly taxes. The Government fee for a patent of invention for three years is 90 silver roubles or $72 gold, for five years $120 gold, for ten years $360. The Government fee upon a patent for importation, for six years, is $288. Importation of patented thing by patentee allowed. A proper charge of an American solicitor for a Russian patent of invention for three years is $300 gold, for five years $450, and for ten years $650; and for a patent of importation for six years $450. Russia offers a vast and remunerative field to inventors.

Spain. Population, in 1864, 16,031,267; area, 192,957 square miles. Patents are granted to the first applicant, inventor or not. Patents of invention are granted for an invention not having been put in practice in Spain or elsewhere. Patents of importation granted for inventions which have been worked abroad but not in Spain. Patents of invention are granted for five, ten, and fifteen years, as asked for; patents of importation for five years only. The Government fee for an invention patent, for five years, is 1,000 reals or $54, for ten years $162, and for fifteen years $324; for importation patent, for five years, $162. No examination made as to novelty or utility; no model re-

quired. The patent must be worked within a year and a day, and the working must not cease for that length of time. Importation of patented article by any one allowed, making patent almost valueless. The proper charge of an American solicitor for a Spanish invention patent, for five years, is $250, for ten years $350, and for fifteen years $575; for an importation patent, for five years, $350. The crown can grant patents for CUBA, but the cheaper and better way is to apply to the governor-general of the island. Cost the same as for Spain.

Italy. Population, by census of 1862, 25,906,937; area, 109,734 square miles. Grants invention patents only, and only to inventors, citizens or foreigners, or their assigns. Grants certificates of addition, and certificates of reduction in the nature of disclaimers. Medicines are not patentable. No examination as to novelty or utility; no model required. Must not have been made public, in detail, in Italy; but the publication of a foreign patent, under a law requiring it, is no bar. Duration from one to fifteen years, as requested by applicant; patents granted for less than fifteen years can be prolonged to full term. Patents granted for five years or less must be worked in the first year, and the working must not cease for a whole year; patents granted for more than five years must be worked within the first two years, and working must not cease for two consecutive years. Importation of the patented thing by patentee generally tolerated, but not of right. There are two kinds of fees or taxes, — proportional and annual. The former is $2 per year; the latter is $8 for each of the first three years, $15 for each of the second three years, $18 for each of the third three years, $23 for each of the fourth three years, and $28 for each of the last three years.

The proportional tax for the whole term of patent demanded must be paid in advance, and the annual tax for the first year, making the advance Government fee for a patent, for six years, $20, which is the advisable term, as it gives the two years for working, and can be prolonged to fifteen. A fair charge by an American solicitor for an Italian patent for six years, including the proportional tax for six years and the annual tax for one year, is $175.

Sweden. Population, by census of 1867, 4,195,681; area, 170,621 British square miles. Patent granted to the inventor only. Only required to be new in Sweden. Medicines, etc., not patentable. Duration, from three months to fifteen years, at the pleasure of the Government, but expires with foreign patent expiring previously. When patented abroad, Swedish patent usually granted for five years. No taxes. Slight examination as to novelty and utility. Government fee a provincial matter, and variable. Importation of the patented article by any one permitted, making a patent nearly valueless. No model required. Fair charge of an American solicitor, $150.

Norway. Population, according to census of 1865, 1,701,478; area, 123,297 British square miles. Duration, not to exceed ten years. Other regulations same as in Sweden, both countries having the same king. Fair charge of American solicitor for Norwegian patent, $150.

Poland. Population, in 1864, 5,319,362; area, 43,240 square miles. Regulations same in general as in Russia, of which Poland is a province. There is something of a preliminary examination by Government officers, but there are no fixed rules in this regard. No model required.

Patents granted for three, five, and ten years, as asked for. Government fee on patent for three years $14, five years $29, ten years $60. Patent must be worked within the first quarter of its term. The law does not forbid the importation of the patented article by the patentee. A fair charge for a Polish patent, by an American agent, would be $225.

Denmark. Population, by census of 1865, 1,726,724; area, 15,307 square miles. Inventor, native or foreign, and first introducers can, respectively, have patents of invention and importation. The duration of invention patents is fixed by the Government, and can not be more than twenty years; patents of importation are for five years. The Government fee for a patent to a single person is $12, to several persons, $24. There is a preliminary examination of some severity. No model required. Patent must be worked within the first year and continue thereafter uninterruptedly. Any one can import the patented article, injuring the value of the patent. A fair charge for a Danish patent, by an American solicitor, is $200.

Baden. Population of the grand-duchy of Baden, by the census of 1867, 1,434,970; area, 5,910 square miles. Inventors, native or foreign, or their assigns may take patents. Invention must not have been made public in Baden or elsewhere. Baden grants patents of invention and of importation,—the former for five, ten, or fifteen years; the latter expire with the foreign patent. The Government charges are not invariable, but the usual amount is $22. The five and ten year patents can be extended to fifteen.

There is a preliminary examination; no model required. A year is usually allowed for working, but importation is taken for working. A fair charge of an American solicitor for a Baden patent is from $150 to $200.

Bavaria. Population, by census of 1867, 4,824,421; area, 29,441 square miles. Inventors, native or foreign, may obtain patents of invention. Importation patents are granted while the foreign patent is yet in force. The invention must not have had sufficient publicity anywhere to enable any save the inventor to put it in practice. The duration of invention patents is fifteen years or less, as demanded by the applicant; importation patents die with the original foreign patent. Patents granted for less than fifteen years can readily be prolonged from time to time, till the full term is reached; and, on account of the charges, it is best to take the patent for a short time at first. Besides certain charges for registering and stamping, which are small but variable, the annual taxes for the first, second, and third years, and so on, are, $13, $15, $20, $25, $30, $35, $45, $55, $67, $75, $87.50, $100, $112.50, $125, $137.50; and these annual taxes must all be paid in advance for the term demanded. No model required. There is an examination as to novelty and utility. The patent should be worked within a year and a day, though six months more are usually allowed invention patents. The law does not seem to prevent the patentee from importing the patented article, nor does it prevent third parties from doing the same, except when the patent is for a machine or a process. A fair charge of an American solicitor for a Bavarian patent of invention or importation, for three years, is $175, and for a prolongation, exclusive of the Government charges, $25.

Portugal. Population, by census of 1863, 3,986,558; area, 36,492 square miles. Inventors and introducers can take patents, foreigners through a citizen and in his name. Patents of addition are also granted. The duration is any term demanded up to fifteen years. Patents of introduction, if taken by another than the inventor, are for five years; if by the inventor, the Portuguese patent expires with his original foreign patent. The Government charges for a patent for one year are about $50, and for each additional year about $6 per year, to be paid in advance. No model required. There is no examination as to novelty or utility. The patent must be worked within the first half of its term. Importation of the patented thing by the patentee is generally tolerated, but not of right. A fair charge by an American solicitor for a Portuguese patent, for five years, is $250.

Saxony. Population, in 1867, 2,423,586; area, 5,779 square miles. Medicines and food compounds are not patentable. Foreigners must take patent in the name of a Saxon subject. Patents are granted to inventors and introducers. Patents of invention may be for five or ten years, as demanded; importation patents for five years or less. Government fee about $37. Invention patents for five years may be prolonged to ten. Patents must be worked within a year; a delay of another year is readily procured for invention patents. Importation constitutes working under an importation patent. Importation of the patented thing by patentee allowed, and, when the invention is other than a machine, a tool, or a new mode of manufacture, third persons are not prevented by the patent from importing the patented thing. No model required. There is an examination as to novelty and utility. A fair charge

by an American solicitor for a Saxon patent, for five years, is $150.

Hanover. Population, in 1867, 385,957; area, 2,240 square miles. Inventors and introducers take patents. Invention only required to be new within the kingdom. Patents are generally granted for five years; importation patents may run ten years, if the original foreign patent runs so long. The Government fee is about $25, not including certain stamp and enrollment charges. Five-year patents can, sometimes, be prolonged to ten. No model required. There is an examination as to novelty and utility. Patent must be worked within six months, but importation constitutes working. Any one can import the patented thing. A fair charge of an American solicitor for a Hanoverian patent, for five years, is $175.

Wurtemburg. Population, in 1867, 1,778,479; area, 5,779 square miles. Granted to inventor or introducer. Duration not to exceed ten years; importation patent expires with original foreign patent expiring previously. Government fees are annual, taxes varying from $2.75 to $8.75 per year, and must be paid in advance for the whole term. Short terms can be extended to the full term. There is a preliminary examination, and, when the patent is granted, its validity can not be attacked by a third party. Patent must be worked within two years, and must not be interrupted for two consecutive years. No model required. Patentees of invention patents can prevent importation of the patented thing by others, but patentees of importation patents can not. A fair charge, by an American solicitor, for a Wurtemburg patent, for five years, is $175.

Holland. Has no patent law.

Greece. No special patent laws exist; but, by a law of 1843, the Government is empowered to grant patents for inventions, subject to the approval of the Senate. Cost variable.

Petty German States: Anhalt-Dessau, Anhalt-Bernburg, Anhalt-Coethen-Brunswick, Bremen, Frankfort, Hamburgh, Hesse-Cassel, Hesse-Darmstadt, Hesse-Homburg, Hohenzollern-Sigmaringen, Lippe-Detmold, Lippe-Schaumburg, Lubeck, Mecklenburg-Schwerin, Mecklenburg-Strelitz, Nassau, Oldenburg, Reuss-Strelitz, Reuss-Greiz, Sachsen-Altenburg, Sachen-Coburg-Gotha, Schwarzburg-Sondershausen, Schwarzburg-Rudolstadt, Waldeck. In these states no special patent laws exist, but they grant special privileges with reference to new inventions.

Brazil. Population, 11,780,000; area, 3,430,000 square miles. Grants only patents of invention, to inventors. The term is from five to twenty years, fixed by the Government. Government fees about $160. No preliminary examination. No model required. Must be worked within one year from the time of commercially working elsewhere, and must not cease for a year.

Chili. Population, 2,000,000; area, 132,609 square miles. — **Peru.** Population, 2,500,000; area, 510,100 square miles. — **New Granada.** Population, 2,794,000; area, 514,000 square miles. — These three countries grant patents of invention and of importation. Duration from five to twenty years, fixed by Government. Government fees about $160. No preliminary examination. No model required. Importation is counted as working.

Paraguay. Population, 1,337,439; area, 89,252 square miles. Granted to inventor or importer. A patentee must get the consent of the Government to patent his invention elsewhere. Term, either five or ten years. Importation patent expires with foreign patent expiring previously. Government charge variable. No preliminary examination. No model required. Must be worked in two years.

Argentine Republic. Population, 1,465,000; area, 542,800 square miles. Patents granted to inventors or first introducers. Chemical compounds not patentable. Duration of invention patents, ten years; of importation patents, five years. Government fee on invention patent, $540; for importation patent, $1,080. No preliminary examination. No model required. Must be worked within a year.

British Colonies. INDIA: Population, 190,000,000; term, fourteen years; solicitor's fair charge, $250. PRINCE EDWARD'S ISLAND: Granted only to residents. NEWFOUNDLAND: Population, 150,000; term, fourteen years; granted to inventor or assigns; solicitor's fair charge, $150. —Patents are also granted in the British colonies of Cape of Good Hope, Jamaica, Barbados, Saint Vincent, Trinidad, Mauritius, Ceylon, New South Wales, Victoria, South Australia, Western Australia, British Guiana, New Zealand, Tasmania, and Queensland.

Also, in the Dutch West Indies, Sardinia, and the Sicilies; but, as it is so little likely that any American inventor will ever want a patent in these countries, it is useless to give here the details with reference to them.

POPULATION BY COUNTIES

OF THE

UNITED STATES of AMERICA,

ACCORDING TO THE CENSUS OF 1870.

ALABAMA.

Area, 50,722 Square Miles; Total Population, 996,992.

Autauga	11,623	Dallas	40,705	Marshall	9,871
Baker	6,194	De Kalb	7,126	Mobile	49,311
Baldwin	6,004	Elmore	14,477	Montgomery	43,704
Barbour	23,309	Escambia	4,041	Morgan	12,187
Bibb	7,469	Etowah	10,109	Monroe	14,214
Blount	9,945	Fayette	7,136	Perry	24,975
Bullock	24,474	Franklin	8,006	Pickens	17,690
Butler	14,981	Geneva	2,959	Pike	17,423
Calhoun	13,980	Greene	18,399	Randolph	12,006
Chambers	17,562	Hale	21,792	Russell	21,636
Cherokee	11,132	Henry	14,191	Sandford	8,893
Choctaw	12,676	Jackson	19,410	Shelby	12,218
Clark	14,663	Jefferson	12,345	St. Clair	9,360
Clay	9,560	Lauderdale	15,091	Sumter	24,109
Cleburne	8,017	Lawrence	16,658	Talladega	18,064
Coffee	6,171	Lee	21,750	Tallapoosa	16,963
Colbert	12,537	Limestone	15,017	Tuscaloosa	20,081
Conecub	9,574	Lowndes	25,719	Walker	6,543
Coosa	11,945	Macon	17,727	Washington	3,912
Covington	4,868	Madison	31,267	Wilcox	28,377
Crenshaw	11,156	Marengo	26,151	Winston	4,155
Dale	11,325	Marion	6,059		

ARKANSAS.

Area, 52,198 Square Miles; Total Population, 484,471.

Arkansas	8,268	Green	7,573	Poinsett	1,720
Ashley	8,042	Hempstead	13,768	Polk	3,376
Benton	13,831	Hot Springs	5,877	Pope	8,386
Boone	7,032	Independence	14,566	Prairie	5,604
Bradley	8,646	Izard	6,806	Pulaski	32,066
Calhoun	3,853	Jackson	7,268	Randolph	7,466
Carroll	5,780	Jefferson	15,733	St. Francis	6,714
Chicot	7,214	Johnson	9,152	Saline	3,911
Clark	11,953	Lafayette	9,139	Scott	7,483
Columbia	11,397	Lawrence	5,981	Searcy	5,614
Conway	8,112	Little River	3,236	Sebastian	12,940
Crawford	8,957	Madison	8,231	Sevier	4,492
Crittenden	3,831	Marion	3,979	Sharpe	5,400
Craighead	4,577	Mississippi	3,633	Union	10,571
Cross	3,915	Monroe	8,336	Van Buren	5,107
Dallas	5,707	Montgomery	2,984	Washington	17,266
Desha	6,125	Newton	4,374	White	10,347
Drew	9,960	Ouachita	12,975	Woodruff	6,891
Franklin	9,627	Perry	2,685	Yell	8,048
Fulton	4,843	Phillips	15,372		
Grant	3,943	Pike	3,788		

CALIFORNIA.

Area, 188,981 Square Miles; Total Population, 560,247.

Alameda	24,237	Marin	6,903	Santa Barbara	7,784
Alpine	685	Mariposa	4,572	Santa Clara	26,246
Amador	9,582	Mendocino	7,545	Santa Cruz	8,743
Butte	11,403	Merced	2,807	Shasta	4,173
Calaveras	8,805	Mono	430	Sierra	5,619
Colusa	6,165	Monterey	9,876	Siskiyou	6,848
Contra Costa	8,461	Napa	7,163	Solano	16,871
Del Norte	2,022	Nevada	19,134	Sonoma	19,819
El Dorado	10,309	Placer	11,357	Stanislaus	6,499
Fresno	6,336	Plumas	4,489	Sutter	5,030
Humboldt	6,140	Sacramento	26,830	Tehama	3,587
Inyo	1,956	San Bernardino	3,988	Trinity	3,213
Kern	2,925	San Diego	4,951	Tulare	4,533
Klamath	1,686	San Francisco	149,473	Tuolumne	8,150
Lake	2,969	San Joaquin	21,050	Yolo	9,899
Lassen	1,327	San L. Obispo	4,772	Yuba	10,851
Los Angelos	15,309	San Mateo	6,635		

CONNECTICUT.

Area, 4,674 Square Miles; Total Population, 537,454.

Fairfield	95,276	Middlesex	36,099	Tolland	22,000
Hartford	109,007	New Haven	121,257	Windham	38,518
Litchfield	48,727	New London	66,570		

DELAWARE.

Area, 2,120 Square Miles; Total Population, 125,015.

Kent	29,804	New Castle	63,515	Sussex	31,696

FLORIDA.

Area, 59,268 Square Miles; Total Population, 187,748.

Alachua	17,328	Hernando	2,928	Nassau	4,247
Baker	1,325	Hillsboro	3,216	Orange	2,195
Bradford	3,671	Holmes	1,572	Polk	3,169
Brevard	1,216	Jackson	9,528	Putnam	3,821
Calhoun	998	Jefferson	13,398	Santa Rosa	3,312
Clay	2,098	La Fayette	1,783	St. John's	2,618
Columbia	7,335	Leon	15,236	Sumter	2,952
Dade	85	Levy	2,018	Suwannee	3,556
Duval	11,921	Liberty	1,050	Taylor	1,453
Escambia	7,817	Madison	11,121	Volusia	1,723
Franklin	1,256	Manatee	1,931	Wakulla	2,506
Gadsden	9,802	Marion	10,804	Walton	3,041
Hamilton	5,749	Monroe	5,657	Washington	2,302

GEORGIA.

Area, 58,000 Square Miles; Total Population, 1,184,109.

Appling	5,086	Campbell	9,176	Colquitt	1,654
Baker	6,843	Carroll	11,782	Columbia	13,529
Baldwin	10,618	Catoosa	4,409	Coweta	15,875
Banks	4,973	Charlton	1,897	Crawford	7,557
Bartow	16,566	Chatham	41,279	Dade	3,033
Berrien	4,518	Chattahoochee	6,059	Dawson	4,369
Bibb	21,255	Chattooga	6,902	Decatur	15,183
Brooks	8,342	Cherokee	10,399	De Kalb	10,014
Bryan	5,252	Clarke	12,941	Dooly	9,790
Bullock	5,610	Clay	5,493	Dougherty	11,517
Burke	17,679	Clayton	5,477	Early	6,998
Butts	6,941	Clinch	3,945	Echols	1,978
Calhoun	5,503	Cobb	13,814	Effingham	4,214
Camden	4,615	Coffee	3,192	Elbert	9,249

Emanuel	6,134	Liberty	7,688	Schley	5,129
Fannin	5,429	Lincoln	5,413	Scriven	9,175
Fayette	8,221	Lowndes	8,321	Spalding	10,205
Floyd	17,230	Lumpkin	5,161	Stewart	14,204
Forsyth	7,983	Macon	11,458	Sumter	16,559
Franklin	7,893	Madison	5,227	Talbot	11,913
Fulton	33,446	Marion	8,000	Taliaferro	4,796
Gilmer	6,644	McIntosh	4,491	Tatnall	4,860
Glascock	2,736	Meriwether	13,756	Taylor	7,143
Glynn	5,376	Miller	3,091	Telfair	3,245
Gordon	9,268	Milton	4,284	Terrell	9,053
Greene	12,454	Mitchell	6,633	Thomas	14,523
Gwinnett	12,431	Monroe	17,213	Towns	2,780
Habersham	6,322	Montgomery	3,586	Troup	17,632
Hall	9,607	Morgan	10,696	Twiggs	8,545
Hancock	11,317	Murray	6,500	Union	5,267
Haralson	4,004	Muscogee	16,663	Upson	9,430
Harris	13,284	Newton	14,615	Walker	9,925
Hart	6,783	Oglethorpe	11,782	Walton	11,038
Heard	7,866	Paulding	7,639	Ware	2,286
Henry	10,102	Pickens	5,317	Warren	10,545
Houston	20,406	Pierce	2,778	Washington	15,842
Irwin	1,837	Pike	10,905	Wayne	2,177
Jackson	11,181	Polk	7,822	Webster	4,677
Jasper	10,439	Pulaski	11,940	White	4,606
Jefferson	12,190	Putnam	10,461	Whitfield	10,117
Johnson	2,964	Quitman	4,150	Wilcox	2,439
Jones	9,436	Rabun	3,256	Wilkes	11,796
Laurens	7,834	Randolph	10,561	Wilkinson	9,383
Lee	9,567	Richmond	25,724	Worth	3,778

ILLINOIS.

Area, 55,405 Square Miles; Total Population, 2,539,891.

Adams	56,362	Greene	20,277	Massac	9,581
Alexander	10,564	Grundy	14,938	McDonough	26,509
Bond	13,152	Hamilton	13,014	McHenry	23,762
Boone	12,942	Hancock	35,935	McLean	53,988
Brown	12,205	Hardin	5,113	Menard	11,735
Bureau	32,415	Henderson	12,582	Mercer	18,769
Calhoun	6,562	Henry	35,506	Monroe	12,982
Carroll	16,705	Iroquois	25,782	Montgomery	25,314
Cass	11,580	Jackson	19,634	Morgan	28,463
Champaign	32,737	Jasper	11,234	Moultrie	10,385
Christian	20,363	Jefferson	17,864	Ogle	27,492
Clark	18,719	Jersey	15,054	Peoria	47,540
Clay	15,875	Jo Daviess	27,820	Perry	13,723
Clinton	16,285	Johnson	11,248	Piatt	10,953
Cowles	25,235	Kane	39,091	Pike	30,768
Cook	349,966	Kankakee	24,352	Pope	11,437
Crawford	13,889	Kendall	12,399	Pulaski	8,752
Cumberland	12,223	Knox	39,522	Putnam	6,280
De Kalb	23,265	Lake	21,014	Randolph	20,859
De Witt	14,768	La Salle	60,792	Richland	12,803
Douglas	13,484	Lawrence	12,533	Rock Island	29,783
Du Page	16,685	Lee	27,171	Saline	12,714
Edgar	21,450	Livingston	31,471	Sangamon	46,352
Edwards	7,565	Logan	23,053	Schuyler	17,419
Effingham	15,653	Macon	26,481	Scott	10,530
Fayette	19,638	Macoupin	32,726	Shelby	25,476
Ford	9,103	Madison	44,131	Stark	10,751
Franklin	12,652	Marion	20,622	St. Clair	51,068
Fulton	38,291	Marshall	16,956	Stephenson	30,608
Gallatin	11,134	Mason	16,184	Tazewell	27,903

Union	16,518	Washington	17,599	Will	43,013
Vermillion	30,388	Wayne	19,758	Williamson	17,329
Wabash	8,841	White	16,846	Winnebago	29,301
Warren	23,174	Whitesides	27,503	Woodford	18,956

INDIANA.

Area, 33,809 Square Miles; Total Population, 1,680,637.

Adams	11,382	Hendricks	20,277	Pike	13,779
Allen	43,494	Henry	22,986	Porter	13,942
Bartholomew	21,133	Howard	15,847	Posey	19,185
Benton	5,615	Huntington	19,036	Pulaski	7,801
Blackford	6,272	Jackson	18,974	Putnam	21,514
Boone	22,593	Jasper	6,354	Randolph	22,862
Brown	8,681	Jay	15,000	Ripley	20,977
Carroll	16,152	Jefferson	29,741	Rush	17,626
Cass	24,193	Jennings	16,218	Scott	7,873
Clarke	24,770	Johnson	18,366	Shelby	21,892
Clay	19,084	Knox	21,562	Spencer	17,998
Clinton	17,330	Kosciusko	23,531	Starke	3,888
Crawford	9,851	La Grange	14,148	Steuben	12,854
Daviess	16,747	Lake	12,339	St. Joseph	25,322
Dearborn	24,116	La Porte	27,062	Sullivan	18,453
Decatur	19,053	Lawrence	14,628	Switzerland	12,134
De Kalb	17,167	Madison	22,770	Tippecanoe	33,515
Delaware	19,030	Marion	71,939	Tipton	11,953
Dubois	12,597	Marshall	20,211	Union	6,341
Elkhart	26,026	Martin	11,103	Vanderburg	33,145
Fayette	10,476	Miami	21,052	Vermillion	10,840
Floyd	23,300	Monroe	14,168	Vigo	33,594
Fountain	16,389	Montgomery	23,765	Wabash	21,305
Franklin	20,223	Morgan	17,528	Warren	10,204
Fulton	12,726	Newton	5,829	Warrick	17,653
Gibson	17,371	Noble	20,389	Washington	18,495
Grant	18,487	Ohio	5,837	Wayne	34,048
Greene	19,514	Orange	13,497	Wells	13,585
Hamilton	20,882	Owen	16,137	White	10,554
Hancock	15,123	Parke	18,166	Whitley	14,399
Harrison	19,913	Perry	14,801		

IOWA.

Area, 50,914 Square Miles; Total Population, 1,191,792.

Adair	3,982	Clinton	35,357	Howard	6,282
Adams	4,614	Crawford	2,530	Humboldt	2,596
Allamakee	17,868	Dallas	12,019	Ida	226
Appanoose	16,456	Davis	15,565	Iowa	16,644
Audubon	1,212	Decatur	12,018	Jackson	22,619
Benton	22,454	Delaware	17,432	Jasper	22,116
Black Hawk	21,706	Des Moines	27,256	Jefferson	17,839
Boone	14,584	Dickinson	1,389	Johnson	24,898
Bremer	12,528	Dubuque	38,969	Jones	19,731
Buchanan	17,034	Emmett	1,392	Keokuk	19,434
Buena Vista	1,585	Fayette	16,973	Kossuth	3,351
Butler	9,951	Floyd	10,768	Lee	37,210
Calhoun	1,602	Franklin	4,738	Linn	28,852
Carroll	2,451	Fremont	11,174	Louisa	12,877
Cass	5,464	Greene	4,627	Lucas	10,388
Cedar	19,731	Grundy	6,399	Lyon	221
Cerro Gordo	4,722	Guthrie	7,061	Madison	13,884
Cherokee	1,967	Hamilton	6,055	Mahaska	22,508
Chickasaw	10,180	Hancock	999	Marion	24,436
Clarke	8,735	Hardin	13,684	Marshall	17,576
Clay	1,523	Harrison	8,931	Mills	8,718
Clayton	27,771	Henry	21,463	Mitchell	9,582

Monona	3,654	Poweshiek	15,581	Wapello	22,346
Monroe	12,724	Ringgold	5,691	Warren	17,980
Montgomery	5,934	Sac	1,411	Washington	18,952
Muscatine	21,688	Scott	38,599	Wayne	11,287
O'Brien	715	Shelby	2,540	Webster	10,484
Page	9,975	Sioux	576	Winnebago	1,562
Palo Alto	1,336	Story	11,651	Winneshiek	23,570
Plymouth	2,199	Tama	16,131	Woodbury	6,172
Pocahontas	1,446	Taylor	6,989	Worth	2,892
Polk	27,857	Union	5,986	Wright	2,392
Pottawattamie	16,893	Van Buren	17,672		

KANSAS.

Area, 78,418 Square Miles; Total Population, 364,399.

Allen	7,022	Greenwood	3,484	Osborne	33
Anderson	5,220	Howard	2,704	Ottawa	2,127
Atchison	15,507	Jackson	6,053	Pawnee	179
Barton	2	Jefferson	12,526	Pottawattamie	7,848
Bourbon	15,076	Jewell	207	Republic	1,281
Brown	6,823	Johnson	13,684	Rice	5
Butler	3,035	Labette	9,973	Riley	5,105
Chase	1,975	Leavenworth	32,444	Russell	156
Cherokee	11,038	Lincoln	516	Saline	4,246
Clay	2,942	Linn	13,174	Sedgwick	1,095
Cloud	2,323	Lyon	8,014	Shawnee	13,131
Coffey	6,201	Marion	768	Smith	66
Cowley	1,175	Marshall	6,901	Sumner	22
Crawford	8,160	McPherson	738	Trego	166
Davis	5,526	Miami	11,725	Wabaunsee	3,362
Dickinson	3,043	Mitchell	485	Wallace	538
Doniphan	13,969	Montgomery	7,564	Washington	4,081
Douglass	20,592	Morris	2,225	Wilson	6,694
Ellis	1,336	Nemeha	7,339	Woodson	3,827
Ellsworth	1,185	Neosho	10,206	Wyandotte	10,015
Ford	427	Ness	2		
Franklin	10,385	Osage	7,648		

KENTUCKY.

Area, 37,680 Square Miles; Total Population, 1,321,011.

Adair	11,065	Clinton	6,497	Henderson	18,457
Allen	10,296	Crittenden	9,381	Henry	11,066
Anderson	5,449	Cumberland	7,690	Hickman	8,453
Ballard	12,576	Daviess	20,714	Hopkins	13,827
Barren	17,780	Edmonson	4,459	Jackson	4,547
Bath	10,145	Elliott	4,433	Jefferson	118,953
Boone	10,696	Estill	9,198	Jessamine	8,638
Bourbon	14,863	Fayette	26,656	John Bell	3,731
Boyd	8,573	Fleming	13,398	Johnson	7,494
Boyle	9,515	Floyd	7,877	Kenton	36,096
Bracken	11,409	Franklin	15,300	Knox	8,294
Breathit	5,672	Fulton	6,161	La Rue	8,235
Breckinridge	13,440	Gallatin	5,074	Laurel	6,016
Bullitt	7,781	Garrard	10,376	Lawrence	8,497
Butler	9,904	Grant	9,529	Lee	3,058
Caldwell	10,826	Graves	19,398	Letcher	4,608
Callaway	9,410	Grayson	11,580	Lewis	9,115
Campbell	27,406	Green	9,379	Lincoln	10,947
Carroll	6,189	Greenup	11,463	Livingston	8,200
Carter	7,509	Hancock	6,591	Logan	20,429
Casey	8,884	Hardin	15,705	Lyon	6,233
Christian	23,227	Harlan	4,415	Madison	19,543
Clark	10,882	Harrison	12,993	Magoffin	4,684
Clay	8,297	Hart	13,687	Marion	12,838

Marshall	9,455	Oldham	9,027	Spencer	5,956
Mason	18,126	Owen	14,309	Taylor	8,226
McCracken	13,988	Owsley	3,889	Todd	12,612
McLean	7,614	Pendleton	14,030	Trigg	13,686
Meade	9,485	Perry	4,274	Trimble	5,577
Menifee	1,986	Pike	9,562	Union	13,640
Mercer	13,144	Powell	2,599	Warren	21,742
Metcalfe	7,934	Pulaski	17,670	Washington	12,464
Monroe	9,231	Robertson	5,399	Wayne	10,602
Montgomery	7,557	Rock Castle	7,145	Webster	10,937
Morgan	5 975	Rowan	2,991	Whitley	8,279
Muhlenburg	12,638	Russell	5,809	Wolfe	3,603
Nelson	14 804	Scott	11,607	Woodford	8,240
Nicholas	9,129	Shelby	15,733		
Ohio	15,561	Simpson	9,573		

LOUISIANA.

Area, 41,255 Square Miles; Total Population, 726,915.

Ascension	11,577	Iberia	9,042	St. Charles	4,857
Assumption	13,224	Iberville	12,347	St. Helena	5,423
Avoyelles	12,926	Jackson	7,646	St. James	10,152
Bienville	10,636	Jefferson	17,767	St. John the Baptist	6,762
Bossier	12,675	Lafayette	10,388	St. Landry	25,553
Caddo	21,714	Lafourche	14,719	St. Martin	9,370
Calcasieu	6,733	Livingston	4,026	St. Mary	13,860
Caldwell	4,820	Madison	8,600	St. Tammany	5,586
Cameron	1,591	Morehouse	9,387	Tangipahoa	7,928
Carroll	10,110	Natchitochez	18,265	Tensas	12,419
Catahoula	8,475	Orleans	191,418	Terrebonne	12,441
Claiborne	20,240	Ouachita	11,582	Union	11,685
Concordia	9,977	Plaquemines	10,552	Vermillion	4,528
De Soto	14,962	Point Coupee	12,981	Washington	3,330
East Baton Rouge	17,816	Rapides	18,015	West Baton Rouge	5,114
East Feliciana	13,499	Richland	5,110	West Feliciana	10,499
Franklin	5,078	Sabine	6,456	Winn	5,954
Grant	4,517	St. Bernard	3,553		

MAINE.

Area, 31,766 Square Miles; Total Population, 626,915.

Androscoggin	35,866	Knox	30,823	Somerset	34,611
Aroostook	29,609	Lincoln	25,597	Waldo	34,522
Cumberland	82,021	Oxford	33,488	Washington	43,343
Franklin	18,811	Penobscot	75,150	York	69,174
Hancock	36,495	Piscataquis	14,403		
Kennebec	53,203	Sagadahoc	18,803		

MASSACHUSETTS.

Area, 7,800 Square Miles; Total Population, 1,457,351.

Barnstable	32,774	Franklin	32,635	Norfolk	89,443
Berkshire	64,827	Hampden	78,409	Plymouth	65,365
Bristol	102,886	Hampshire	44,388	Suffolk	270,802
Dukes	3,787	Middlesex	274,353	Worcester	192,716
Essex	200,843	Nantucket	4,123		

MICHIGAN.

Area, 56,243 Square Miles; Total Population, 1,184,059.

Alcona	696	Benzie	2,184	Cheboygan	2,196
Allegan	32,105	Berrien	35,104	Chippewa	1,689
Alpena	2,756	Branch	26,226	Clare	366
Antrim	1,985	Calhoun	36,569	Clinton	22,845
Barry	22,199	Cass	21,094	Delta	2,542
Bay	15,900	Charlevoix	1,724	Eaton	25.171

Emmet	1,211	Leelanaw	4,576	Oceana	7,222
Genesee	33,900	Lenawee	45,595	Ogemaw	12
Grand Traverse	4,443	Livingston	19,336	Ontonagon	2,845
Gratiot	11,810	Mackinac	1,716	Osceola	2,093
Hillsdale	31,684	Macomb	27,616	Oscoda	70
Houghton	13,879	Manistee	6,074	Ottawa	26,651
Huron	9,049	Manitou	891	Presque Isle	355
Ingham	25,268	Marquette	15,033	Saginaw	39,097
Ionia	27,681	Mason	3,263	Sanilac	14,562
Iosco	3,163	Mecosta	5,642	Shiawassee	20,858
Isabella	4,113	Menominee	1,791	St. Clair	36,661
Jackson	36,047	Midland	3,285	St. Joseph	26,275
Kalamazoo	32,054	Missaukee	130	Tuscola	13,714
Kalkaska	424	Monroe	27,483	Van Buren	28,829
Kent	50,403	Montcalm	13,629	Washtenaw	41,434
Keweenaw	4,205	Muskegon	14,894	Wayne	119,038
Lake	548	Newaygo	7,294	Wexford	650
Lapeer	21,345	Oakland	40,867		

MARYLAND.

Area, 11,124 Square Miles; Total Population, 780,894.

Alleghany	38,536	Dorchester	19,458	Saint Mary's	14,944
Anne Arundel	24,457	Frederick	47,572	Somerset	18,190
Baltimore	330,741	Harford	22,605	Talbot	16,137
Calvert	9,865	Howard	14,150	Washington	34,712
Caroline	12,101	Kent	17,102	Wicomico	15,802
Carroll	28,619	Montgomery	20,563	Worcester	16,419
Cecil	25,874	Prince George's	21,138		
Charles	15,738	Queen	16,171		

MINNESOTA.

Area, 95,274 Square Miles; Total Population, 439,706.

Aitkin	178	Hennepin	21,566	Pope	2,691
Anoka	3,940	Houston	14,936	Ramsey	23,085
Becker	308	Isanti	2,035	Redwood	1,829
Beltrami	80	Itasca	96	Renville	3,219
Benton	1,558	Jackson	1,825	Rice	16,083
Big Stone	24	Kanabec	93	Rock	138
Blue Earth	17,302	Kandiyohi	1,760	Scott	11,042
Brown	6,396	Lac qui Parle	145	Sherburne	2,050
Carlton	286	Lake	135	Sibley	6,725
Carver	11,586	Le Sueur	11,607	Stearns	14,206
Cass	380	Martin	3,867	Steele	8,271
Chippewa	1,467	McLeod	5,643	Stevens	174
Chisago	4,358	Meeker	6,090	St. Louis	4,561
Clay	92	Mille Lac	1,109	Todd	2,036
Cottonwood	534	Monongalia	3,160	Traverse	13
Crow Wing	200	Morrison	1,681	Wabashaw	15,859
Dakota	16,312	Mower	10,447	Wadena	6
Dodge	8,598	Murray	209	Waseca	7,854
Douglass	4,239	Nicollet	8,362	Washington	11,809
Faribault	9,940	Nobles	117	Watonwan	2,426
Fillmore	24,887	Olmsted	19,793	Wilkin	295
Freeborn	10,578	Otter Tail	1,968	Winona	22,319
Goodhue	22,618	Pembina	64	Wright	9,457
Grant	340	Pine	648		

MISSISSIPPI.

Area, 47,156 Square Miles; Total Population, 827,922.

Adams	19,084	Bolivar	9,732	Choctaw	16,988
Alcorn	10,431	Calhoun	10,561	Claiborne	13,586
Amite	10,973	Carroll	21,047	Clark	7,505
Attala	14,776	Chickasaw	19,899	Coahoma	7,144

Copiah	20,608	Lauderdale	13,462	Prentiss	9,348
Covington	4,753	Lawrence	6,620	Rankin	12,977
De Soto	32,021	Leake	8,496	Scott	7,847
Franklin	7,498	Lee	15,955	Simpson	5,718
Greene	2,038	Lincoln	10,184	Smith	7,126
Grenada	10,571	Lowndes	30,502	Sunflower	5,015
Hancock	4,239	Madison	20,948	Tallahatchie	7,852
Harrison	5,795	Marion	4,211	Tippah	20,727
Hinds	30,488	Marshall	29,416	Tishemingo	7,350
Holmes	19,370	Monroe	22,631	Tunica	5,358
Issaquena	6,887	Neshoba	7,439	Warren	26,769
Itawamba	7,812	Newton	10,067	Washington	14,569
Jackson	4,362	Noxubee	20,905	Wayne	4,206
Jasper	10,884	Oktibbeha	14,891	Wilkinson	12,705
Jefferson	13,848	Panola	20,754	Winston	8,984
Jones	3,313	Perry	2,694	Yalabusha	13,254
Kemper	12,920	Pike	11,303	Yazoo	17,279
Lafayette	18,802	Pontotoc	12,525		

MISSOURI.

Area, 67,380 Square Miles; Total Population, 1,721,295.

Adair	11,448	Greene	21,549	Ozark	3,363
Andrew	15,137	Grundy	10,567	Pemiscot	2,059
Atchison	8,440	Harrison	14,635	Perry	9,877
Audrain	12,307	Henry	17,401	Pettis	18,706
Barry	10,373	Hickory	6,452	Phelps	10,506
Barton	5,087	Holt	11,652	Pike	23,076
Bates	15,960	Howard	17,233	Platte	17,352
Benton	11,322	Howell	4,218	Polk	12,445
Bollinger	8,162	Iron	6,278	Pulaski	4,714
Boone	20,765	Jackson	55,041	Putnam	11,217
Buchanan	35,109	Jasper	14,928	Ralls	10,510
Butler	4,298	Jefferson	15,380	Randolph	15,908
Caldwell	11,390	Johnson	24,648	Ray	18,700
Callaway	19,202	Knox	10,974	Reynolds	3,756
Camden	6,108	Laclede	9,380	Ripley	3,175
Cape Girardieu	17,558	Lafayette	22,623	Saline	21,672
Carroll	17,446	Lawrence	13,067	Schuyler	8,820
Carter	1,455	Lewis	15,114	Scotland	10,670
Cass	19,296	Lincoln	15,960	Scott	7,317
Cedar	9,474	Linn	15,900	Shannon	2,339
Chariton	19,136	Livingston	16,730	Shelby	10,119
Christian	6,707	Macon	23,230	St. Charles	21,304
Clarke	13,667	Madison	5,849	St. Clare	6,742
Clay	15,564	Maries	5,916	St. Genevieve	8,384
Clinton	14,063	Marion	23,780	St. Francois	9,742
Cole	10,292	McDonald	5,226	St. Louis	351,189
Cooper	20,692	Mercer	11,557	Stoddard	8,535
Crawford	7,982	Miller	6,616	Stone	3,253
Dade	8,683	Mississippi	4,982	Sullivan	11,907
Dallas	8,383	Moniteau	11,375	Taney	4,407
Daviess	14,410	Monroe	17,149	Texas	9,618
De Kalb	9,858	Montgomery	10,405	Vernon	11,247
Dent	6,357	Morgan	8,434	Warren	9,673
Douglass	3,915	New Madrid	6,357	Washington	11,719
Dunklin	5,982	Newton	12,821	Wayne	6,068
Franklin	30,098	Nodaway	14,751	Webster	10,434
Gasconade	10,093	Oregon	3,287	Worth	5,004
Gentry	11,607	Osage	10,793	Wright	5,684

NEBRASKA.

Area, 75,995 Square Miles; Total Population, 122,993.

Adams	19	Blackbird	31	Buffalo	193

Burt	2,847	Jackson	9	Sarpy	2,913
Butler	1,290	Jefferson	2,440	Saunders	4,547
Cass	8,151	Johnson	3,429	Seward	2,953
Cedar	1,032	Kearney	58	Stanton	636
Cheyenne	190	Lancaster	7,074	Taylor	97
Clay	54	L'Eau qui Court	261	Washington	4,452
Colfax	1,424	Lincoln	17	Wayne	182
Cuming	2,964	Lyon	78	Webster	16
Dakota	2,040	Madison	1,133	York	604
Dawson	103	Merrick	557	Unorganized N.W. Territory	52
Dixon	1,345	Monroe	235	Unorganized Territory west of Madison County	183
Dodge	4,212	Nemaha	7,593	Winnebago Indian reservation	31
Douglass	19,982	Nuckolls	8	Pawnee Indian reservation	44
Fillmore	238	Otoe	12,345		
Franklin	26	Pawnee	4,171		
Gage	3,359	Pierce	152		
Grant	484	Platte	1,899		
Hall	1,057	Polk	136		
Hamilton	130	Richardson	9,780		
Harrison	631	Saline	3,106		

NEVADA.

Area, 112,090 Square Miles; Total Population, 42,491.

Churchill	196	Lander	2,815	Roop	133
Douglas	1,215	Lincoln	2,985	Storey	11,359
Elko	3,447	Lyon	1,837	Washoe	3,091
Esmeralda	1,553	Nye	1,087	White Pine	7,189
Humboldt	1,916	Ormsby	3,668		

NEW HAMPSHIRE.

Area, 9,280 Square Miles; Total Population, 318,300.

Belknap	17,681	Grafton	39,103	Strafford	30,243
Carroll	17,332	Hillsborough	64,238	Sullivan	18,058
Cheshire	27,265	Merrimack	42,151		
Coos	14,932	Rockingham	47,297		

NEW JERSEY.

Area, 8,320 Square Miles; Total Population, 906,096.

Atlantic	14,093	Gloucester	21,562	Ocean	13,628
Bergen	30,122	Hudson	129,067	Passaic	46,416
Burlington	53,639	Hunterdon	36,963	Salem	23,940
Camden	46,193	Mercer	46,386	Somerset	23,510
Cape May	8,349	Middlesex	45,029	Sussex	23,168
Cumberland	34,665	Monmouth	46,195	Union	41,859
Essex	143,839	Morris	43,137	Warren	34,336

NEW YORK.

Area, 47,000 Square Miles; Total Population, 4,382,759.

Albany	133,052	Franklin	30,271	Oneida	110,008
Alleghany	40,814	Fulton	27,064	Onondaga	104,183
Broome	44,103	Genesee	31,606	Ontario	45,108
Cattaraugus	43,909	Greene	31,832	Orange	80,902
Cayuga	59,550	Hamilton	2,960	Orleans	27,689
Chautauqua	59,327	Herkimer	39,929	Oswego	77,941
Chemung	35,281	Jefferson	65,415	Otsego	48,967
Chenango	40,564	Kings	419,921	Putnam	15,420
Clinton	47,947	Lewis	28,699	Queens	73,803
Columbia	47,044	Livingston	38,309	Rensselaer	99,549
Cortland	25,173	Madison	43,522	Richmond	33,029
Delaware	42,972	Monroe	117,868	Rockland	25,213
Dutchess	74,041	Montgomery	34,457	Saratoga	51,529
Erie	178,699	New York	942,292	Schenectady	21,347
Essex	29,042	Niagara	50,437	Schoharie	33,340

Schuyler 18,989	Sullivan..... 34,550	Washington 49,568
Seneca 27,823	Tioga 30,572	Wayne 47,710
Steuben 67,717	Tompkins..... 33,178	Westchester 131,348
St. Lawrence..... 84,826	Ulster 84,075	Wyoming 29,164
Suffolk..... 46,924	Warren..... 22,592	Yates..... 19,595

NORTH CAROLINA.

Area, 50,704 Square Miles; Total Population, 1,071,361.

Alamance..... 11,874	Edgecombe 22,970	Northampton 14,749
Alexander 6,868	Forsyth 13,050	Onslow..... 7,569
Alleghany..... 3,691	Franklin..... 14,134	Orange..... 17,507
Anson..... 12,428	Gaston 12,602	Pasquotank 8,131
Ashe 9,573	Gates..... 7,724	Perquimans..... 7,945
Beaufort 13,011	Granville..... 24,831	Person 11,170
Bertie 12,950	Greene 8,687	Pitt..... 17,276
Bladen 12,831	Guilford..... 21,736	Polk..... 4,319
Brunswick 7,754	Halifax 20,408	Randolph 17,551
Buncombe 15,412	Harnnett..... 8,895	Richmond 12,882
Burke 9,777	Haywood 7,921	Robeson..... 16,262
Cabarrus..... 11,954	Henderson 7,706	Rockingham..... 15,708
Caldwell 8,476	Hertford 9,273	Rowan 16,810
Camden 5,361	Hyde..... 6,445	Rutherford..... 13,121
Carteret 9,010	Iredell..... 16,931	Sampson 16,436
Caswell..... 16,081	Jackson 6,683	Stanley..... 8,315
Catawba..... 10,984	Johnston 16,897	Stokes 11,208
Chatham 19,723	Jones..... 5,002	Surry..... 11,252
Cherokee..... 8,080	Lenoir 10,434	Transylvania..... 3,536
Chowan 6,450	Lincoln 9,573	Tyrrell 4,173
Clay..... 2,461	Macon 6,615	Union 12,217
Cleaveland..... 12,696	Madison..... 8,192	Wake 35,617
Columbus 8,474	Martin 9,647	Warren..... 17,768
Craven 20,516	McDowell 7,592	Washington 6,516
Cumberland..... 17,035	Mecklenburg..... 24,299	Watauga 5,287
Currituck 5,131	Mitchell..... 4,705	Wayne 18,144
Dare 2,778	Montgomery 7,487	Wilkes 15,539
Davidson..... 17,414	Moore 12,040	Wilson 12,258
Davie 9,620	Nash 11,077	Yadkin..... 10,697
Duplin 15,542	New Hanover..... 27,978	Yancy..... 5,909

OHIO.

Area, 39,964 Square Miles; Total Population, 2,665,260.

Adams 20,750	Fairfield 31,138	Licking 35,756
Allen..... 23,623	Fayette..... 17,170	Logan 23,028
Ashland..... 21,933	Franklin..... 63,019	Lorain 30,308
Ashtabula..... 32,517	Fulton 17,789	Lucas 46,722
Athens 23,768	Gallia 25,545	Madison..... 15,633
Auglaize 20,041	Geauga..... 14,190	Mahoning..... 31,001
Belmont..... 39,714	Greene 28,038	Marion..... 16,184
Brown 30,802	Guernsey..... 23,838	Medina..... 20,092
Butler..... 39,912	Hamilton 260,370	Meigs 31,465
Carroll 14,491	Hancock 23,847	Mercer 17,254
Champaign 24,188	Hardin..... 18,714	Miami..... 32,740
Clark..... 32,070	Harrison 18,682	Monroe..... 25,779
Clermont..... 34,268	Henry..... 14,028	Montgomery 64,006
Clinton..... 21,914	Highland 29,133	Morgan 20,363
Columbiana..... 38,299	Hocking 17,925	Morrow 18,583
Coshocton 23,600	Holmes 18,177	Muskingum 44,886
Crawford..... 25,556	Huron 28,532	Noble 19,949
Cuyahoga 132,010	Jackson 21,759	Ottawa..... 13,364
Darke 32,278	Jefferson 29,188	Paulding..... 8,544
Defiance..... 15,719	Knox 26,333	Perry..... 18,453
Delaware..... 25,175	Lake 15,935	Pickaway 24,875
Erie 28,188	Lawrence 31,380	Pike..... 15,447

Portage	24,584	Shelby	20,748	Warren	26,689
Preble	21,809	Stark	52,508	Washington	40,609
Putnam	17,081	Summit	34,674	Wayne	35,116
Richland	32,516	Trumbull	38,659	Williams	20,991
Ross	37,097	Tuscarawas	53,840	Wood	24,596
Sandusky	25,503	Union	18,730	Wyandot	18,553
Scioto	29,302	Van Wert	15,823		
Seneca	30,827	Vinton	15,027		

OREGON.

Area, 102,606 Square Miles; Total Population, 90,923.

Baker	2,804	Grant	2,251	Tillamook	408
Benton	4,584	Jackson	4,778	Umatilla	2,916
Clackamas	5,993	Josephine	1,204	Union	2,552
Clatsop	1,255	Lane	6,426	Wasco	2,509
Columbia	863	Linn	8,717	Washington	4,261
Coos	1,644	Marion	9,965	Yam Hill	5,012
Curry	504	Multnomah	11,510		
Douglas	6,066	Polk	4,701		

PENNSYLVANIA.

Area, 46,000 Square Miles; Total Population, 3,521,791.

Adams	30,315	Delaware	39,403	Montgomery	81,612
Alleghany	262,204	Elk	8,488	Montour	15,344
Armstrong	43,382	Erie	65,973	Northampton	61,432
Beaver	36,148	Fayette	43,284	Northumberland	41,444
Bedford	29,635	Forest	4,010	Perry	25,447
Berks	106,701	Franklin	45,365	Philadelphia	674,022
Blair	38,051	Fulton	9,360	Pike	8,436
Bradford	53,204	Greene	25,887	Potter	11,265
Bucks	64,336	Huntingdon	31,251	Schuylkill	116,428
Butler	36,510	Indiana	36,138	Snyder	15,606
Cambria	36,569	Jefferson	21,656	Somerset	28,226
Cameron	4,273	Juniata	17,390	Sullivan	6,191
Carbon	28,144	Lancaster	121,340	Susquehanna	37,523
Centre	34,418	Lawrence	27,298	Tioga	35,097
Chester	77,805	Lebanon	34,096	Union	15,565
Clarion	26,537	Lehigh	56,796	Venango	47,925
Clearfield	25,741	Luzerne	160,755	Warren	23,897
Clinton	23,211	Lycoming	47,626	Washington	48,483
Columbia	28,766	McKean	8,825	Wayne	33,188
Crawford	63,832	Mercer	49,977	Westmoreland	58,719
Cumberland	43,912	Mifflin	17,508	Wyoming	14,585
Dauphin	60,740	Monroe	18,362	York	76,134

RHODE ISLAND.

Area, 1,306 Square Miles; Total Population, 217,353.

Bristol	9,421	Newport	20,050	Washington	20,097
Kent	18,595	Providence	149,190		

SOUTH CAROLINA.

Area, 29,385 Square Miles; Total Population, 705,606.

Abbeville	31,129	Fairfield	19,888	Oconee	10,536
Anderson	24,049	Georgetown	16,161	Orangeburg	16,865
Barnwell	35,724	Greenville	22,262	Pickens	10,269
Beaufort	34,359	Horry	10,721	Richland	23,025
Charleston	88,863	Kershaw	11,754	Spartanburg	25,784
Chester	18,805	Lancaster	12,087	Sumter	25,268
Chesterfield	10,584	Laurens	22,536	Union	19,248
Clarendon	14,038	Lexington	12,988	Williamsburg	15,489
Colleton	25,410	Marion	22,160	York	24,286
Darlington	26,243	Marlborough	11,814		
Edgefield	42,486	Newberry	20,775		

TENNESSEE.

Area, 45,600 Square Miles; Total Population, 1,258,520.

Anderson	8,704	Hancock	7,148	Obion	15,584
Bedford	24,333	Hardeman	18,074	Overton	11,297
Benton	8,234	Hardin	11,768	Perry	6,925
Bledsoe	4,870	Hawkins	15,837	Polk	7,369
Blount	14,237	Haywood	25,094	Putnam	8,698
Bradley	11,652	Henderson	14,217	Rhea	5,538
Campbell	7,445	Henry	20,380	Roane	15,622
Cannon	10,502	Hickman	9,853	Robertson	16,166
Carroll	19,447	Humphreys	9,326	Rutherford	33,289
Carter	7,909	Jackson	12,583	Scott	4,054
Cheatham	6,678	Jefferson	19,476	Sequatchie	2,335
Claiborne	9,321	Johnson	5,852	Sevier	11,028
Cocke	12,458	Knox	28,990	Shelby	76,378
Coffee	10,237	Lake	2,428	Smith	15,994
Cumberland	3,461	Lauderdale	10,838	Stewart	12,019
Davidson	62,897	Lawrence	7,601	Sullivan	13,136
Decatur	7,772	Lewis	1,986	Sumner	23,711
De Kalb	11,425	Lincoln	28,050	Tipton	14,884
Dickson	9,340	Macon	6,633	Union	7,605
Dyer	13,706	Madison	23,480	Van Buren	2,725
Fayette	26,145	Marion	6,841	Warren	12,714
Fentress	4,717	Marshall	16,207	Washington	16,317
Franklin	14,970	Maury	36,289	Wayne	10,209
Gibson	25,666	McMinn	13,969	Weakley	20,755
Giles	32,413	McNairy	12,726	White	9,375
Grainger	12,421	Meigs	4,511	Williamson	25,328
Greene	21,668	Monroe	12,589	Wilson	25,881
Grundy	3,250	Montgomery	24,747		
Hamilton	17,241	Morgan	2,969		

TEXAS.

Area, 237,504 Square Miles; Total Population, 818,579.

Anderson	9,229	Coryell	4,124	Hays	4,088
Angelina	3,985	Dallas	13,314	Henderson	6,786
Atascosa	2,915	Davis	8,875	Hidalgo	2,387
Austin	15,087	Dewmit	109	Hill	7,453
Bandera	649	Denton	7,251	Hood	2,585
Bastrop	12,290	De Witt	6,443	Hopkins	12,651
Bee	1,082	Duval	1,083	Houston	8,147
Bell	9,771	Eastland	88	Hunt	10,291
Bexar	16,043	Ellis	7,514	Jack	694
Bexar District	1,077	El Paso	3,671	Jackson	2,278
Blanco	1,187	Ensinal	427	Jasper	4,218
Bosque	4,981	Erath	1,801	Jefferson	1,906
Bowie	4,684	Falls	9,851	Johnson	4,923
Brazoria	7,527	Fannin	13,207	Karnes	1,705
Brazos	9,205	Fayette	16,863	Kaufman	6,895
Brown	544	Fort Bend	7,114	Kendall	1,536
Burleson	8,072	Freestone	8,139	Kerr	1,042
Burnet	3,688	Frio	309	Kimble	72
Caldwell	6,572	Galveston	15,290	Kinney	1,204
Calhoun	3,443	Gillespie	3,566	Lamar	15,790
Cameron	10,999	Goliad	3,628	Lampasas	1,344
Chambers	1,503	Gonzales	8,951	La Salle	69
Cherokee	11,079	Grayson	14,387	Lavaca	9,168
Coleman	347	Grimes	13,218	Leon	6,523
Collin	14,013	Guadaloupe	7,282	Liberty	4,414
Colorado	8,326	Hamilton	733	Limestone	8,591
Comal	5,283	Hardin	1,460	Live Oak	852
Comanche	1,001	Harris	17,375	Llano	1,379
Cook	5,315	Harrison	13,241	Madison	4,061

Marion	8,562	Parker	4,186	Travis	13,153
Mason	678	Polk	8,707	Trinity	4,141
Matagorda	3,377	Presidio	1,636	Tyler	5,010
Maverick	1,951	Red River	10,653	Upshur	12,039
McCulloch	173	Refugio	2,324	Uvalde	851
McLennan	13,500	Robertson	9,990	Van Zandt	6,494
McMullen	230	Rusk	16,916	Victoria	4,860
Medina	2,078	Sabine	3,256	Walker	9,776
Menard	667	San Augustine	4,196	Washington	23,104
Milam	8,984	San Patricio	602	Webb	2,615
Montague	890	San Saba	1,425	Wharton	3,426
Montgomery	6,483	Shackleford	455	Williamson	6,366
Nacogdoches	9,614	Shelby	5,732	Wilson	2,556
Navarro	8,879	Smith	16,532	Wise	1,450
Newton	2,187	Starr	4,154	Wood	6,894
Neuces	3,975	Stephens	330	Young	135
Orange	1,255	Tarrant	5,788	Zapata	1,488
Panola	10,119	Titus	11,339	Zavala	133

VERMONT.

Area, 10,212 Square Miles; Total Population, 330,551.

Addison	23,484	Franklin	30,291	Rutland	40,651
Bennington	21,325	Grand Isle	4,082	Washington	26,508
Caledonia	22,247	Lamoille	12,448	Windham	26,036
Chittenden	36,480	Orange	23,090	Windsor	36,063
Essex	6,811	Orleans	21,035		

VIRGINIA.

Area, 38,352 Square Miles; Total Population, 1,225,163.

Accomac	20,409	Frederick	16,596	Nottoway	9,291
Albemarle	27,544	Giles	5,875	Orange	10,396
Alexandria	16,755	Gloucester	10,211	Page	8,462
Alleghany	3,674	Goochland	10,313	Patrick	10,161
Amelia	9,878	Grayson	9,587	Pittsylvania	31,343
Amherst	14,900	Greene	4,634	Powhatan	7,667
Appomattox	8,950	Greenville	6,362	Prince Edward	12,004
Augusta	28,763	Halifax	27,828	Prince George	7,820
Bath	3,795	Hanover	16,455	Princess Anne	8,273
Bedford	25,327	Henrico	66,179	Prince William	7,504
Bland	4,000	Henry	12,303	Pulaski	6,538
Botetourt	11,329	Highland	4,151	Rappahannock	8,261
Brunswick	13,427	Isle of Wight	8,320	Richmond	6,503
Buchanan	3,777	James City	4,425	Roanoke	9,350
Buckingham	13,371	King and Queen	9,709	Rockbridge	16,058
Campbell	28,384	King George	5,742	Rockingham	23,668
Caroline	15,128	King William	7,515	Russell	11,103
Carroll	9,147	Lancaster	5,355	Scott	13,036
Charles City	4,975	Lee	13,268	Shenandoah	14,936
Charlotte	14,513	Loudon	20,929	Smyth	8,898
Chesterfield	18,470	Louisa	16,332	Southampton	12,285
Clarke	6,670	Lunenburg	10,403	Spottsylvania	11,728
Craig	2,942	Madison	8,670	Stafford	6,420
Culpepper	12,227	Matthews	6,200	Surry	5,585
Cumberland	8,142	Mecklenburg	21,318	Sussex	7,885
Dinwiddie	30,702	Middlesex	4,981	Tazewell	10,791
Elizabeth City	8,303	Montgomery	12,556	Warren	5,716
Essex	9,927	Nansemond	11,576	Warwick	1,672
Fairfax	12,952	Nelson	13,898	Washington	16,816
Fauquier	19,690	New Kent	4,381	Westmoreland	7,682
Floyd	9,824	Norfolk	46,702	Wise	4,785
Fluvanna	9,875	Northampton	8,046	Wythe	11,611
Franklin	18,264	Northumberland	8,863	York	7,198

WEST VIRGINIA.

Area, 23,000 Square Miles; Total Population, 442,014.

Barbour	10,312	Jefferson	13,219	Pocahontas	4,067
Berkeley	14,900	Kanawha	22,349	Preston	14,555
Boone	4,553	Lewis	10,175	Putnam	7,794
Braxton	6,480	Lincoln	5,053	Raleigh	3,673
Brooke	5,464	Logan	5,124	Randolph	5,563
Cabell	6,429	Marion	12,107	Ritchie	9,055
Calhoun	2,939	Marshall	14,941	Roane	7,232
Clay	2,196	Mason	15,978	Taylor	9,367
Doddridge	7,076	McDowell	1,952	Tucker	1,907
Fayette	6,647	Mercer	7,064	Tyler	7,832
Gilmer	4,338	Mineral	6,332	Upshur	8,023
Grant	4,467	Monongalia	13,547	Wayne	7,852
Greenbrier	11,417	Monroe	11,124	Webster	1,730
Hampshire	7,643	Morgan	4,315	Wetzel	8,595
Hancock	4,363	Nicholas	4,458	Wirt	4,804
Hardy	5,518	Ohio	28,831	Wood	19,000
Harrison	16,714	Pendleton	6,455	Wyoming	3,171
Jackson	10,300	Pleasants	3,012		

WISCONSIN.

Area, 53,924 Square Miles; Total Population, 1,054,670.

Adams	6,601	Green	23,611	Polk	3,422
Ashland	221	Green Lake	13,195	Portage	10,634
Barron	538	Iowa	24,544	Racine	26,740
Bayfield	344	Jackson	7,687	Richland	15,731
Brown	25,168	Jefferson	34,040	Rock	39,030
Buffalo	11,123	Juneau	12,372	Sauk	23,860
Burnett	706	Kenosha	13,147	Shawanaw	3,166
Calumet	12,335	Kewaunee	10,128	Sheboygan	31,749
Chippewa	8,311	La Crosse	20,297	St. Croix	11,035
Clark	3,450	La Fayette	22,659	Trempeleau	10,732
Columbia	28,802	Manitowoc	33,364	Vernon	18,645
Crawford	13,075	Marathon	5,885	Walworth	25,972
Dane	53,096	Marquette	8,056	Washington	23,919
Dodge	47,035	Milwaukee	89,930	Waukesha	28,274
Door	4,919	Monroe	16,550	Waupacca	15,539
Douglas	1,122	Oconto	8,321	Waushara	11,279
Dunn	9,488	Outagamie	18,430	Winnebago	37,279
Eau Claire	10,769	Ozaukee	15,564	Wood	3,912
Fond du Lac	46,273	Pepin	4,659		
Grant	37,979	Pierce	9,958		

TERRITORIES.

ARIZONA.

Area, 113,916 Square Miles; Total Population, 9,658.

Mohave	179	Pima	5,716	Yuma	1,621
		Yavapai	2,142		

COLORADO.

Area, 104,500 Square Miles; Total Population, 39,864.

Arapahoe	6,829	El Paso	987	Larimer	838
Bent	592	Fremont	1,064	Las Animas	4,276
Boulder	1,939	Gilpin	5,490	Park	447
Clear Creek	1,596	Greenwood	510	Pueblo	2,265
Conejos	2,504	Huerfano	2,250	Saguache	304
Costilla	1,779	Jefferson	2,392	Summit	258
Douglas	1,388	Lake	522	Weld	1,636

DAKOTA.

Area, 50,932 Square Miles; Total Population, 14,181.

Bon Homme	608	Hutchinson	37	Union	3,507
Brookings	163	Jayne	5	Yankton	2,097
Buffalo	246	Lincoln	712	Unorganized portion of Territory	2,091
Charles Mix	152	Minnehaha	355		
Clay	2,621	Pembina	1,213		
Deuel	37	Todd	337		

DISTRICT OF COLUMBIA.

Area, 60 Square Miles; Total Population, 131,700.

Georgetown City	11,384	Washington City	109,199	Remainder of Dis.	1,117

IDAHO.

Area, 86,294 Square Miles; Total Population, 14,999.

Ada	2,675	Idaho	849	Oneida	1,922
Alturas	689	Lemhi	988	Owehee	1,713
Boise	3,834	Nez Perces	1,607	Shoshone	725

MONTANA.

Area, 143,776 Square Miles; Total Population, 20,595.

Beaver Head	722	Deer Lodge	4,367	Madison	2,684
Big Horn	38	Gallatin	1,578	Meagher	1,387
Choteau	517	Jefferson	1,531	Missoula	2,554
Dawson	177	Lewis and Clarke	5,040		

NEW MEXICO.

Area, 121,201 Square Miles; Total Population, 91,874.

Bernalillo	7,591	Mora	8,056	Socorro	6,603
Colfax	1,992	Rio Arriba	9,204	Taos	12,079
Dona-Ana	5,864	San Miguel	16,058	Valencia	9,093
Grant	1,143	Santa Ana	1,599		
Lincoln	1,803	Santa Fe	10,769		

UTAH.

Area, 84,476 Square Miles; Total Population, 86,786.

Beaver	2,007	Millard	2,753	Sevier	19
Box Elder	4,855	Morgan	1,972	Summit	2,512
Cache	8,229	Piute	82	Tooele	2,177
Davis	4,459	Rich	1,955	Utah	12,203
Iron	2,277	Rio Virgin	450	Wasatch	1,244
Juab	2,034	Salt Lake	18,337	Washington	3,064
Kane	1,513	San Pete	6,786	Weber	7,858

WASHINGTON.

Area, 69,994 Square Miles; Total Population, 23,955.

Chehalis	401	Klikitat	329	Thurston	2,246
Clallam	408	Lewis	888	Wahkiakum	270
Clarke	3,081	Mason	289	Walla-Walla	5,300
Cowlitz	730	Pacific	738	Whatcom	534
Island	626	Pierce	1,409	Yakima	432
Jefferson	1,268	Skamania	133	The Disputed Islands	554
King	2,120	Snohomish	599		
Kitsap	866	Stevens	7[illegible]		

WYOMING.

Area, 97,883 Square Miles; Total Population, 9,118.

Albany	2,021	Laramie	2,957	Uintah	856
Carbon	1,368	Sweetwater	1,916		

The total for the States is	38,113,253
The total for the Territories is	442,730
Grand total	38,555,983

ONE HUNDRED PRINCIPAL CITIES.

CENSUS OF 1870.

New York, N. Y.	942,292	Scranton, Pa.	35,092	Bridgeport, Ct.	19,960
Philadelphia, Pa.	674,022	Reading, Pa	33,930	Erie, Pa.	19,646
Brooklyn, N. Y.	396,099	Columbus, Ohio	33,509	Wheeling, W. Va.	19,282
St. Louis, Mo	310,864	Paterson, N. J.	33,579	Norfolk, Va.	19,229
Chicago, Ill.	298,977	Dayton, Ohio	30,473	Taunton, Mass.	18,629
Baltimore, Md.	267,354	Kansas City, Mo.	32,260	Chelsea, Mass	18,547
Boston, Mass.	250,526	Mobile, Ala.	32,034	Dubuque, Ia.	18,434
Cincinnati, Ohio.	216,239	Portland, Me.	31,414	Leavenworth, Ks.	17,873
New Orleans, La.	161,418	Wilmington, Del.	30,841	Fort Wayne, Ind.	17,718
San Francisco	149,473	Lawrence, Mass.	28,021	Springfield, Ill	17,364
Buffalo, N. Y.	117,714	Toledo, Ohio	31,584	Auburn, N. Y.	17,225
Washington, D. C.	109,199	Charlestown, Mass.	28,323	Newburgh, N. Y.	17,014
Newark, N. J.	105,059	Lynn, Mass.	28,233	St. Joseph, Mo.	19,565
Louisville, Ky.	100,753	Fall River, Mass.	26,766	Petersburgh, Va.	18,950
Cleveland, Ohio	92,829	Springfield, Mass.	26,703	Atlanta, Ga.	21,789
Pittsburgh, Pa.	86,076	Nashville, Tenn.	25,865	Norwich, Ct.	16,653
Jersey City, N. J.	92,546	Covington, Ky.	24,505	Sacramento, Cal.	16,283
Detroit, Mich.	79,577	Salem, Mass.	24,117	Omaha, Neb.	16,083
Milwaukee, Wis.	71,440	Quincy, Ill.	24,053	Elmira, N. Y.	15,863
Albany, N. Y.	69,442	Manchester, N. H.	23,536	Gloucester, Mass.	15,389
Providence	68,904	Harrisburg, Pa.	23,104	Cohoes, N. Y.	15,357
Rochester	62,386	Trenton, N. J.	22,874	New Albany, Ind.	15,396
Allegheny, Pa.	53,180	Peoria, Ill.	22,849	N. Brunswick, N. J.	15,058
Richmond, Va.	51,038	Evansville, Ind.	21,830	Terre Haute, Ind.	16,403
New Haven, Ct.	50,840	New Bedford, Mass.	21,320	Bangor, Me.	18,289
Charleston, S. C.	48,956	Oswego, N. Y.	20,910	Newport, Ky.	15,087
Troy, N. Y.	46,465	Elizabeth, N. J.	20,832	Grand Rapids, Mch.	16,507
Syracuse, N. Y.	43,051	Lancaster, Pa.	20,233	Augusta, Ga.	15,389
Worcester, Mass.	41,105	Savannah, Ga.	28,235	Burlington, Vt.	14,387
Lowell, Mass.	40,928	Hoboken, N. J.	20,297	Alexandria, Va.	13,570
Memphis, Tenn.	40,226	Poughkeepsie, N. Y.	20,080	Sandusky, Ohio	13,000
Cambridge, Mass.	39,634	Camden, N. J.	20,045	Lewiston, Me.	13,600
Hartford, Ct.	37,180	Davenport, Ia.	20,038		
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